No. 82-909

In the Supreme Court of the United States

October Term, 1982

International Rectifier Corporation, Rachelle Laboratories Italia S.p.A., Rachelle Laboratories, Inc. and Rachelle Pharmaceuticals International, S.A.

Petitioners,

vs.

Pfizer, Inc.

Respondent.

On Certiorari to the United States Court of Appeals For the Ninth Circuit

PETITION FOR WRIT OF CERTIORARI

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QUESTION PRESENTED

Is the standard of materiality applied to information to be disclosed to the U.S. Patent and Trademark Office a lower standard than that applied to information to be disclosed to prospective shareholders in securities transactions?

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PETITION FOR WRIT OF CERTIORARI

Petitioners International Rectifier Corporation et al., pray that a writ of certiorari may be issued to review the opinion and judgment of the United States Court of Appeals for the Ninth Circuit entered in this case.

OPINIONS BELOW

The opinion of the Court of Appeals appears at 685 F.2d 357, and is printed in the Appendix at A.2. The District Court's opinion is reported at 207 USPQ 397 (C.D. Cal. 1980); a partial copy appears in the Appendix at page A.5.

JURISDICTION

The judgment sought to be reviewed was entered on August 26, 1982. Rehearing was denied on September 30, 1982; a copy of the Order denying the petition for rehearing is printed in the Appendix at page A.1. This Court has jurisdiction to review pursuant to 28 U.S.C. Section 1254(1).

STATEMENT OF THE CASE

Pfizer, Inc. ("Pfizer") brought this action against International Rectifier et al. ("IR") for infringement of its U.S. Patent No. 3,200,149 (the "doxycycline patent").

At trial, IR conceded infringement, asserted invalidity because of obviousness, and asserted a number of specific instances of misrepresentations and withholdings made by Pfizer during the prosecution of the doxycycline patent, in violation of its obligation of candor to the U.S. Patent Office (now the U.S. Patent and Trademark Office, but referred to herein as the "Patent Office").

The doxycycline patent is directed to a class of antibiotics of the tetracycline family and, particularly, to the compound doxycycline (alpha-6-deoxyoxytetracycline), and to a process for making doxycycline and certain related compounds. Doxycycline is a widely-used commercial, broad-spectrum antibiotic.

Among the various misrepresentations and withholdings which IR asserted at trial were Pfizer's withholding of information conclusively demonstrating the inactivity of doxycycline against a particular tetracycline-resistant bacterium in living organisms while submitting evidence of favorable test tube results against the same bacterium, Pfizer's withholding of information evidencing its final conclusion that its efforts to employ a ruthenium catalyst in the process claimed for making doxycycline "have failed", and Pfizer's withholding of its final conclusion that its attempts to produce one of the compounds related to doxycycline, viz., 7-chlorodoxycycline, in the claimed process, were "unsuccessful".

The record establishes and the District Court found that Pfizer failed to disclose these facts to the Patent Office. However, the District Court found that Pfizer's withholdings did not amount to fraud or inequitable conduct, because none of its withholdings or misrepresentations was "material".

In its analysis of IR's fraud defense, the District Court determined the materiality of the misrepresented or withheld information under the so-called subjective "but for" test. Under this test, fraud or inequitable conduct before the Patent Office is found only if it can be shown that but for the willful withholding of information from, or but for the willful misrepresentation of information to the Patent Office, the patent would not have been granted.

The Court of Appeals affirmed the lower Court's decision and adopted the District Court's subjective "but for" test, stating:

> " . . . false statements or omissions are material so as to constitute fraud before the Patent Office when such statements or omissions were a *"substantial cause"* of the patent grant or a *"crucial factor"* in obtaining the patent . . . The proper focus in determining the materiality of the information misrepresented to or withheld from the Patent Office is in the effect of the misrepresentation or withholding upon the subjective considerations of the patent examiner." 685 F.2d at 359; Appendix at A.3.

The Court concluded that the information withheld by Pfizer was not a "crucial factor" or a "substantial cause" of the patent grant, in the light of testimony by a former Patent Examiner that the information withheld "would not have made any difference" in his decision to grant the doxycycline patent. 685 F.2d at 359; Appendix at A.4. Thus, the Court of Appeals did not find that "but for" Pfizer's misrepresentations and withholdings the doxycycline patent would not have been granted. Accordingly, the Court of Appeals held that Pfizer's conduct was not so "material" as to warrant IR's fraud and inequitable conduct defense.

REASONS FOR GRANTING THE WRIT

I. THE COURT BELOW IMPOSED A STANDARD OF CANDOR WHICH PROVIDES NO INCENTIVE FOR PATENT APPLICANTS TO DISCLOSE IMPORTANT INFORMATION TO THE PATENT OFFICE AND WHICH FAILS TO PROTECT THE PUBLIC INTEREST IN THE INTEGRITY OF THE PATENT SYSTEM

The constitutional scheme grants to inventors the right to exclude others from making, using and selling their inventions during the lifetime of the patent. The *quid pro quo* underlying the patent grant is therefore the award of a private monopoly in consideration for the disclosure of the invention to the public. Such a private monopoly conflicts with the general hostility of American jurisprudence to monopolies. However, the public policy of encouraging innovation and the disclosure of such innovation to the public has been deemed to outweigh the public policy opposing private monopolies, when the innovation meets the conditions of patentability mandated under Title 35 (the patent code), e.g., novelty, utility and non-obviousness (See 35 USC 101, 102 and 103).

The social and economic consequences of excluding certain products and processes from free and open competition give the public a paramount interest in seeing that patent monopolies do in fact meet the statutory conditions of patentability. When a patent is obtained on subject matter that is not novel or useful or is obvious, and the patent owner then attempts to enforce the patent monopoly, the patent owner not only usurps rights which belong to the public but also undermines the fundamental purpose of the patent laws—to promote innovation. Accordingly, in order to justify the grant of patent monopolies, it is essential that the Patent Office be apprised of all information that may have an important bearing on its decision of whether or not to grant the patent.

Because the Patent Office has no independent testing facilities, it must rely on the patent applicant to disclose important information. Hence, the only way to assure that the

standards of patentability are properly applied and that the resulting private monopolies are limited to their legitimate scope, is to hold the applicant to the highest standards of disclosure and candor and to fashion rules which are designed to assure compliance with those standards.

In accordance with the high degree of public interest which permeates the patent system, this Court in *Precision Instruments Mfg Co.* v. *Automotive Maintenance Mach. Co.*, 324 U.S. 806 (1945), imposed an uncompromising duty of disclosure on all patent applicants:

> "Those who have applications pending with the Patent Office or who are parties to Patent Office proceedings have an uncompromising duty to report to it all facts concerning possible fraud or inequitableness underlying the application in issue . . . Public interest demands that all facts relevant to such matters be submitted formally or informally to the Patent Office which can then pass upon the sufficiency of the evidence. Only in this way can that agency act to safeguard the public in the first instance against fraudulent patent monopolies." 324 U.S. at 818.

In the present case, however, the Court of Appeals for the Ninth Circuit has applied a standard of materiality which is inconsistent with the uncompromising duty of candor required in *Precision Instruments.* The Court of Appeals' standard requires a court to look at the subjective effect of any misrepresentations or withholdings on the Patent Examiner who considered the application. If the court concludes that the withholding or misrepresentation was a substantial cause or crucial or decisive factor in obtaining the patent—i.e., that "but for" the withholding or misstatement, the patent would not have been granted, then and only then will fraud or inequitable conduct be found. If the withheld or misrepresented information was important to the patentability decision, but would not have been crucial or decisive, no fraud or misconduct will be found.

The "but for" test provides absolutely no inducement for a patent applicant to disclose important information to the Patent

Office. In order to establish "but for" materiality, one must first establish that, if the Patent Office Examiner had considered the withheld or misrepresented information, the Examiner would have decided not to issue the patent on some other independent ground, e.g., lack of novelty or utility, or obviousness. If the Examiner would have refused to issue the patent because of the withheld or misrepresented information, the patent is invalid. But if the applicant had made the disclosure to the Patent Office, then the applicant would not have obtained a patent in the first instance. Thus the patent applicant lost nothing by withholding or misrepresenting the facts.

On the other hand, under the "but for" test, if the withheld or misrepresented information was not crucial and the patent would have issued anyway, then, despite the withholding or misrepresentation, the patent is still valid and enforceable. This is true even if the withheld or misrepresented information would have been important in deciding whether or not the patent should have been granted.

A. PATENT APPLICANTS SHOULD BE HELD TO THE SAME STANDARD OF CANDOR BEFORE THE PATENT OFFICE AS THAT REQUIRED IN SECURITIES TRANSACTIONS

The similarity between the standard of candor required of applicants before the United States Patent Office and of those engaged in securities transactions under the jurisdiction of the Securities and Exchange Commission has previously been recognized. In fact, the standards of candor have been equated, both by the Patent Office (see Manual of Patent Examining Procedure Section 2001.05, April 1980 Revision, Appendix, at page A.24), and in *Monsanto Co.* v. *Rohm & Haas Co.*, 312 F.Supp. 778 (ED Pa. 1970), affirmed 456 F.2d 592 (3d Cir. 1972), cert. denied 407 U.S. 934 (1972), where the Court said:

> "The patent applicant should be held to the same standard of truthful disclosure to the Patent Office that

> Congress has required of the seller of securities to the public." 312 F.Supp. at 793

In *Monsanto*, the court was confronted with the argument that a patent applicant should not be subject to the same rigorous standards imposed on a dealer in securities. In rejecting this argument, the Court stated:

> "Plaintiff argues, however, that the standards of disclosure under the securities act, even if deliberately breached, should not apply to the patent applicant because the purpose of those standards is to prevent the inexpert investing public from being misled. The Patent Office, on the other hand, has the expertise necessary to decide whether to issue a patent without requiring complete scientific candor from patent applicants. We find this argument to be without merit for two reasons. First, the public does have an interest in seeing that 17 year monopolies are not given without a full and complete airing of all relevant facts. This public interest cannot be diminished by the fact that it is not as directly involved in the patent process as the investing public is in the process of the sale of a security. Second, the Patent Office cannot possibly have a detailed technical expertise in every scientific area without relying to some degree on the scientific candor of patent applicants. It cannot be expected to perform tests and experiments to determine whether an applicant's alleged invention is in fact an invention. Further, since patent application proceedings are not ordinarily adversary proceedings, the Patent Office must rely on the tests and experiments and good faith of the applicant." 312 F.Supp. at 793.

The definition of materiality promulgated by the Ninth Circuit is, however, in direct conflict with the definition of materiality defined by this Court for securities transactions in *TSC Industries* v. *Northway*, 426 U.S. 438 (1976). The *TSC Industries* case concerns omissions and misstatements made in connection with Section 14(a) of the Securities and Exchange Act of 1934 and Rules 14(a)-9 and 14(a)-3 promulgated by the Securities and Exchange Commission, dealing with proxy

solicitation. In *TSC*, this Court specifically rejected a definition in which omitted or misstated information must be *decisive* to be material. Instead the court held that for the omitted or misstated information to be material it must only be important, stating:

> "The general standard of materiality that we think best comports with the policies of Rule 14a-9 is as follows: an omitted fact is material if there is a substantial likelihood that a reasonable shareholder would consider it *important* in deciding how to vote. . . . It does not require proof of a substantial likelihood that disclosure of the omitted fact would have caused the reasonable investor to change his vote. What the standard does contemplate is a showing of a substantial likelihood that, under all the circumstances, the omitted fact would have assumed *actual significance* in the deliberations of the reasonable shareholder. Put another way, there must be a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of information made available." *426* U.S. at 449; (emphasis added).

Thus, we are confronted with an anomaly. In a securities transaction among private parties any information which would be *important* to reasonable shareholders or investors must be disclosed. On the other hand, in transactions before the Patent Office, transactions which result in the granting of private monopolies by removing selected products and processes from the competitive market place, the Court of Appeals for the Ninth Circuit has imposed a much lower standard of disclosure.

There is no basis in logic or policy for such a distinction, especially in this case which involves a widely used, commercial antibiotic. Clearly, it is in society's interest to have this type of drug available at the lowest price possible. This interest should be thwarted only by a patent granted after complete consideration of all known important information.

The societal interest in preventing fraud in securities transactions is certainly no greater than the societal interest in

preventing fraud in the granting of patents. If anything, that interest in the integrity of the patent system is greater, because of the private, monopolistic nature of patent grants. Surely, a prospective licensee of a patent, i.e., a potential investor in a patent, should have the same level of confidence that a patent is not tainted with fraud that a prospective investor in a company owning that patent has in a stock, bond, or other security of that company. Surely, conduct which would be penalized in a securities transaction should not be rewarded by the grant of a patent.

The subjective "but for" test applied by the Court of Appeals in this case is likely to be applied throughout the federal courts in future proceedings. Under P.L. 97-164 the new Court of Appeals for the Federal Circuit (the "CAFC") now has exclusive jurisdiction over all patent appeals from the District Courts. The Courts of Appeals for the various circuits will no longer decide patent appeals. In *South Corp.* v. *U.S.*, F.2d (CAFC 1982), the first published opinion by the CAFC, the CAFC declared that the holdings of its predecessor courts will be binding on it as precedent. The Court of Customs and Patent Appeals (the "CCPA"), one of the CAFC's predecessor courts, has, however, previously applied the same subjective "but for" test followed by the Ninth Circuit in the case at bar,[1] *Norton v. Curtiss*; 433 F.2d 779 (CCPA, 1970); and *Langer & Tornquist* v. *Kaufman & McMullen*, 465 F.2d 915 (CCPA 1972). It is thus incumbent on this Court to review the "but for" rule espoused by the Court of Appeals in the present case, and by the CCPA, in order to avoid perpetuating a rule in *all* federal courts which may compromise the very integrity of the patent system.

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[1] In fact, the Court of Appeals relied on the *Norton* rule in reaching its decision herein. 685 F.2d at 359.

II. GUIDANCE FROM THIS COURT IS NECESSARY TO CORRECT THE HOPELESS CONFUSION IN PRIOR DETERMINATIONS AS TO THE MATERIALITY OF WITHHOLDINGS AND MISREPRESENTATIONS BEFORE THE PATENT OFFICE

Apart from the compelling public policy considerations advanced above, guidance from this Court is necessary to resolve the utter chaos in the lower courts and the Patent Office respecting the determination of the materiality of information withheld from or misrepresented to the Patent Office during patent prosecution.

First, contrary to the Court of Appeals in this case, the Patent Office Rules (37 CFR 1.56(a), Appendix at page A.23) define material information as information "where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." This is a paraphrase of the Supreme Court definition of materiality in *TSC Industries, supra* (Manual of Patent Examining Procedure, Section 2001.05, Appendix at page A.24). Thus, there is a conflict between the Patent Office Rule and the "but for" test of the *Norton* precedent adopted in this case and most likely to be made binding on all the District Courts by the CAFC.

Second, the wide diversity in the test for materiality heretofore adopted by the various Courts of Appeals and District Courts establishes a need for a definition of the materiality standard by this Court. Some courts have adopted a test known as the objective "but for" test wherein if the court concludes that the invention was objectively patentable under the full and accurate factual circumstances, then any withholding or misrepresentation is not deemed material.[2]

The objective "but for" test is to be contrasted with the subjective "but for" test adopted by the Court of Appeals in the present case. This test requires a court to examine the

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[2] *Feed Service Corp v. Kent Feeds Inc., 528* F.2d *756,* (7th Cir. 1976); *Wen Products Inc. v. Portable Electric Tools Inc.,* 367 F.2d 764, (7th Cir. 1966).

subjective effect which fraudulent representations had upon the Patent Office Examiner. If "but for" the misrepresentations or withholdings the Examiner would not have issued the patent, then the misrepresentations or withholdings are material.[3] Neither of these "but for" tests provides the slightest incentive for full disclosure by patent applicants.

Still other courts have adopted definitions of materiality similar to the Patent Office test. Such courts impose on patent applicants the obligation to disclose not only those facts "but for" the withholding or misrepresentation of which the resulting patent would not have been granted, but those additional facts which may be relevant to or important in the determination of patentability.[4]

The diverse and conflicting views of the federal trial and appellate courts, and the federal agency charged with administering the patent system, call out to this Court for further guidance as to the correct "materiality" standard to be applied in determining the scope of the obligation of candor imposed upon all applicants for patent.

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[3] *Eudy v. Motor-Guide, Herschede Hall Clock Co.*, 651 F.2d 299, 305 (5th Cir. 1981); *Clark Equipment Co.* v. *Keller*, 570 F.2d 778, 790 (8th Cir. 1978), *cert. denied*, 439 U.S. 825 (1978).

[4] *Timely Products Corporation, et al v. Aaron et al*, 523 F.2d 288, 298 (2d Cir. 1975); *In re Multidistrict Litigation Involving Frost Patent*, 540 F.2d 601, 604 (3d Cir. 1976): "An omission or misrepresentation is material if it makes it 'impossible for the Patent Office fairly to assess [the patent] application against the prevailing statutory criteria.' "; and *Monsanto Co. v. Rohm & Haas Co.*, 456 F.2d 592, 600 (3d Cir. 1972), cert. denied, 407 U.S. 934 (1972); *Duplan v. Deering Milliken Corp.*, 444 F.Supp. 648, 732 (D.C.S.C. 1977), rev'd in part on other grounds, 594 F.2d 979 (4th Cir. 1979), cert. denied, 444 U.S. 1015 (1980); *True Temper Corp. v. C F&I Steel Corp.*, 601 F. 2d 495, 504 (10th Cir. 1979): "The withheld information was material in that it was relevant and clearly significant to the consideration of the application by the Patent Office".

CONCLUSION

For the reasons stated above, the subjective "but for" test of materiality adopted by the Court of Appeals for the Ninth Circuit in the present case does not adequately protect the societal interest in the integrity of the patent system. Accordingly, a writ of *certiorari* should be granted for the purpose of determining the proper test to be applied respecting the materiality of misrepresentations and withholdings of information relied upon as evidence of fraud or inequitable conduct in defense of patent infringement proceedings.

Respectfully submitted,

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ORDER DENYING THE PETITION FOR REHEARING
(Filed September 30, 1982)

No. 81-5227

UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

Pfizer, Inc.

Plaintiff-Appellee

vs.

International Rectifier Corporation, Rachelle Laboratories Italia, S.p.A., Rachelle Laboratories, Inc., and Rachelle Pharmaceuticals International, S.A.

Defendants-Appellants.

Before: Ely, Goodwin and Wallace, Circuit Judges

The Petition for rehearing is denied.

OPINION OF THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT
(Filed August 26, 1932)

No. 81-5227

UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

Pfizer, Inc.

Plaintiff-Appellee

vs.

International Rectifier Corporation, Rachelle Laboratories Italia, S.p.A., Rachelle Laboratories, Inc., and Rachelle Pharmaceuticals International, S.A.

Defendants-Appellants.

APPEAL FROM UNITED STATES DISTRICT COURT FOR THE CENTRAL DISTRICT OF CALIFORNIA

Martin Pence, District Judge, Presiding
Argued and Submitted August 4, 1982

Before: ELY, GOODWIN, and WALLACE, Circuit Judges

ELY, CIRCUIT JUDGE:

Essentially upon the basis of the findings of fact and the carefully reasoned opinion of the District Judge, reported at F. Supp. , 207 U.S.P.Q. 397 (C.D. Cal. 1980), we affirm the judgment upholding the validity of Pfizer's Patent No. 3,200,149.

A word here is proper, however, concerning the scope of the concept of materiality in determinations of whether a party's withholding of information from the Patent Office constitutes a fraud or inequitable conduct sufficient to operate as a bar to a claim of infringement. The parties vigorously

dispute the proper standard of materiality as enunciated by this Court in prior cases. At oral argument the appellants asserted that the District Court's opinion was contrary to three controlling Ninth Circuit decisions that address the issue of fraud before the Patent Office. *See W. R. Grace & Co., Inc. v. Western U.S. Industries, Inc.*, 608 F.2d 1214, 1218 (9th Cir. 1979), *cert. denied*, 446 U.S. 953 (1980); *Maurice A. Garbell, Inc. v. Boeing Co.*, 546 F.2d 297 (9th Cir. 1976), *cert. denied*, 431 U.S. 955 (1977); *Monolith Portland Midwest Co. v. Kaiser Aluminum & Chemical Corp.*, 407 F.2d 288 (9th Cir. 1969). We do not agree. The District Court's opinion is consistent with the standards announced in those cases.

In judging whether misrepresentations made before the Patent Office rise to the level of fraud or inequitable conduct that would justify invocation of the maxim of unclean hands, we have not adopted, as the appellants argue, a definition of materiality that encompasses any information that "might affect" the patentability of the claimed invention. Rather, we have adhered to the proposition that false statements or omissions are material so as to constitute fraud before the Patent Office when such statements or omissions were a "*substantial cause*" of the patent grant or a "*crucial factor*" in obtaining the patent. *See W. R. Grace & Co., Inc.*, 608 F.2d at 1218; *Cataphote Corporation v. DeSoto Chemical Coatings, Inc.*, 450 F.2d 769, 773 (9th Cir. 1971), *cert. denied*, 408 U.S. 929 (1972); *Monolith Portland Midwest Co.*, 407 F.2d at 296. The proper focus in determining the materiality of information misrepresented to or withheld from the Patent Office is on the *effect* of the misrepresentation or withholding upon the subjective considerations of the patent examiner. *See Norton v. Curtiss*, 433 F.2d 779, 795 (C.C.P.A. 1970).

The appellants have cited and relied on language in our cases that a patent applicant has a duty to disclose "all facts which may affect the patentability of his invention." *Monolith*, 407 F.2d at 294; *see Maurice A. Garbell, Inc. v. Boeing Co.*, 546 F.2d 297, 300 (9th Cir. 1976), *cert. denied*, 431 U.S. 955 (1977). This standard is inapposite to a determination of the *materiality* of false statements or omissions before the Patent Office; rather, the *Monolith* language bears on another requisite element of fraud—that of state of mind, or scienter. *See W. R.*

Grace & Co., Inc., 608 F.2d at 1218. An inquiry into whether withheld information "may affect" the patentability of an invention must be distinguished from a determination of the actual impact of omitted information upon a patent examiner's decisions. The former is an inquiry into the state of mind of the applicant at the time the decision to withhold is made; the latter is an inquiry into the materiality of the information withheld.

In addition to materiality, a party seeking to invalidate a patent by invocation of the doctrine of unclean hands must establish a sufficiently culpable state of mind on the part of the patent applicant. *Carpet Seaming Tape Licensing Corp. v. Best Seam Incorporated*, 616 F.2d 1133, 1138-39 (9th Cir. 1980). We have stated that only a showing of wrongfulness, willfulness, bad faith, or gross negligence, proved by clear and convincing evidence, will establish sufficient culpability for invocation of the doctrine of unclean hands. *See Carpet Seaming Tape Licensing Corp.*, 616 F.2d at 1138-39; *W. R. Grace & Co., Inc.*, 608 F.2d at 1218 (standard established if plaintiff's course of conduct "reveals a calculated recklessness about the truth").

The District Court's opinion in this case was consistent with these standards. It found that the appellants failed to show by clear and convincing evidence that Pfizer misrepresented or concealed prior art, facts, or information material or pertinent to patentability. See F. Supp. at , 207 U.S.P.Q. at 437. In making this determination the District Court properly relied on the patent examiner's testimony that he was not misled by Pfizer's representations, *id.* at , 207 U.S.P.Q. at 408, 430, and that certain information Pfizer withheld "would not have made any difference" to the patent examiner's decision, *id.* at , 207 U.S.P.Q. at 430. The evidence clearly supports a finding that the information withheld by Pfizer was not a crucial factor or a substantial cause of the patent grant and, therefore, the District Court's conclusion that the information was not material is not error.

AFFIRMED.

EXCERPTS FROM THE CORRECTED DECISION OF THE UNITED STATES DISTRICT COURT FOR THE CENTRAL DISTRICT OF CALIFORNIA
(Filed June 12, 1980)

No. 73-58

UNITED STATES DISTRICT COURT FOR THE CENTRAL DISTRICT OF CALIFORNIA

Pfizer,[1] Inc.

Plaintiff-Appellee

vs.

International Rectifier Corporation, Rachelle Laboratories Italia, S.p.A., Rachelle Laboratories, Inc., and Rachelle Pharmaceuticals International, S.A.

Defendants-Appellants.

("CORRECTED"*) DECISION

On May 5, 1961 Application Ser. No. 106,146 was filed in the United States Patent Office as a continuation in part (c.i.p.) of a prior co-pending Application Ser. No. 31,236 as filed May 23, 1960. The application listed Robert E. Blackwood, Hans H. Rennhard, John J. Beereboom, and Charles R. Stephens, Jr., inventors, as assignors to Charles R. Pfizer & Co., Inc. of New York, N.Y., a Delaware corporation. The application was for a patent on 6-deoxytetracycline derivatives and process. It was not until over five years later, on August 10, 1965, that Patent #3,200,149 was issued on certain chemical processes and products, one of which was the chemical compound that came to be known as alpha-6-deoxy-5-oxytetracycline. The generic name for that compound is doxycycline, marketed by Pfizer under the trademarked name of Vibramycin.

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[1] The corporate name was subsequently changed to Pfizer, Inc.

* After this court's decision was filed, a number of typographical, et al, errors were noted by counsel. This "court-corrected decision" does but eliminate those errors. The changes are not essential.

Doxycycline, a synthetically produced chemical of the tetracycline family, proved to be a broad spectrum antibiotic exhibiting a high order of antibacterial action against a wide range of disease-causing microorganisms. It had essentially the same antibacterial properties of the fermentation-produced tetracyclines but had antibacterial action (microbiological activity against gram-positive and gram-negati/e microorganisms) superior to that of any other then known 6-deoxytetracyclines. As appeared in the file wrapper of the patent, it took a smaller amount of doxycycline to secure the antibacterial action expected from any of the then known tetracyclines. Because it took a smaller dosage to produce like antibiotic effects, a patient taking doxycycline did not have to take as many or as large dosages of a tetracycline drug as had been necessary before. Although it was *not* set forth in the patent application as one of the properties of the drug, doxycycline was found to have a lipophilicity much greater than any tetracycline and could be used much more freely by persons with renal diseases. Doxycycline became one of the msot commercially successful of the tetracycline group of antibiotic drugs.

International Rectifier Corporation (IR), with head office in California,[2] began making doxycycline in Italy using the process described in Pfizer's patent, and started selling and distributing it in the United States and elsewhere in 1973, at a price very much lower than that charged by Pfizer. Pfizer then brought the patent infringement suit now before the court, seeking damages and declaratory and injunctive relief, in the Central District of California, against IR, as well as U.S.V. Pharmaceutical Corporation, which had distributed IR's doxycycline[3] in the United States.

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[2] International Rectifier Corporation had 4 subsidiaries: Rachelle Laboratories Italia S.p.A. of Italy; Rachelle Laboratories, Inc., with its principal place of business in Los Angeles County, California; Rachell Pharmaceuticals International, S.A. of Brussels, Belgium; and Rachelle Laboratories (Philippines), Inc. Rachelle Italia is no longer in existence.

[3] IR's trade name was Doxychel

As is standard procedure in almost every patent infringement action, IR and USV answered that Pfizer's patent was invalid and unenforceable for failure to meet statutory requirements of patentability and for fraud and misconduct before the Patent Office. Both defendants at first admitted infringement but thereafter moved to amend their answers, asserting unfair competition and antitrust counterclaims, as well as denying infringement. (This court subsequently refused to allow them to amend to deny infringement.) Upon defendants' motion, and because the so-called "Antibiotics Antitrust Litigation"[4] was already pending there, the Judicial Panel on Multidistrict Litigation, in March 1973, transferred the case to District Judge Miles W. Lord in the District of Minnesota.

During pretrial action before Judge Lord, defendants moved for partial summary judgment, claiming that Pfizer's conduct during the processing of the patent constituted fraud, inequitable conduct, and unclean hands, and, in addition, charged that Pfizer's conduct before Judge Lord between 1973 and 1975 was also fraudulent and inequitable and separately justified invalidation of the patent.

On July 16, 1975, Judge Lord granted partial summary judgment against Pfizer on both grounds and declared that its doxycycline patent was invalid and unenforceable.[5]

Pfizer appealed, and on June 16, 1976, the Appellate Court reversed Judge Lord, 538 F. 2d 180 (8th Cir. 1976), holding that the evidence presented as to alleged misconduct of Pfizer before the Patent Office showed the existence of such material issues of fact as to preclude summary judgment. The Appellate Court further held that Judge Lord's findings that Pfizer had practiced fraud and other inequitable conduct upon the court were clearly erroneous. The case was then remanded for completion of pretrial proceedings to be followed by a plenary trial.

This judge was requested by both plaintiff and defendants to try the case, jury-waived, and, with the consent of Judge

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[4] This litigation was concerned with the fermentation-produced tetracyclines.

[5] Pfizer, Inc. v. International Rectifier, 186 U.S.P.Q. 511, D.Minn. 1975.

Lord he took over the case. Upon motion, the Judicial Panel transferred it back to the Central District of California. Then followed further extensive pretrial proceedings, during which USV reached an agreement with Pfizer and withdrew from the case.[6] Trial on the issue of validity and all issues relating to enforceability which involved claims of fraud or inequitable conduct in the Patent Office was started on October 15, 1978 before this judge, sitting in the Central District of California, and continued almost uninterruptedly until March 8, 1979. The trial produced over 6,000 pages of transcript, over 2,000 exhibits, and almost a "ten-foot shelf" of depositions. Post-trial Briefs and Answering Post-trial Briefs were also filed by both plaintiff and defendants.[7] The mass of evidence produced at trial more than proved the soundness of the conclusion of the 8th Circuit that there were such material disputed issues of facts as to preclude summary judgment. Disputed issues of intent, good faith, credibility, and other subjective feelings, all of which are entwined in any claim of fraud or inequitable conduct before the Patent Office, demanded full examination through a plenary trial.

Although this case was tried in the 9th Circuit, nevertheless this court feels that the statements of the Court of Appeals for the 8th Circuit regarding the law of the case approach the level of stare decises, if not res adjudicata. As pointed out by the 8th Circuit:

> The principle that a defendant in a patent infringement action may interpose as a complete defense the patentee's failure to deal candidly with the Patent Office is a corollary of the equitable doctrine of unclean hands. The Supreme Court has set forth the duty of candor owed by a patent applicant as follows:

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[6] IR immediately amended its answer to charge USV and Pfizer as having engaged in an unlawful conspiracy, etc. USV and IR, however, subsequently settled that claim.

[7] Counsel on each side proved to be highly competent attorneys, exceptionally well versed in chemical patent litigation, and the interests of their respective clients were well protected on the record. All issues were unstintingly and bitterly contested.

> Those who have applications pending with the Patent Office or who are parties to Patent Office proceedings have an uncompromising duty to report to it all facts concerning possible fraud or inequitableness underlying the applications in issue. * * * Public interest demands that all facts relevant to such matters be submitted formally or informally to the Patent Office, which can then pass upon the sufficiency of the evidence. Only in this way can the agency act to safeguard the public in the first instance against fraudulent patent monopolies.
>
> *Precision Instrument Manufacturing Co. v. Automotive Maintenance Machinery Co.*, 324 U.S. 806, 818 (1945).

The equitable origins of this doctrine, combined with recognition of the growing administrative burden facing the Patent Office, have led to expansion of the defense in recent years to encompass also a wide variety of inequitable conduct short of common law fraud or deceit. (558 F.2d 180, 185)

* * * [T]he standard [of conduct] is not one of strict liability for innocent or even negligent omissions or misstatements before the Patent Office. Rather, to result in refusal to enforce a patent, the misconduct must be accompanied by "some element of wrongfulness, willfulness, or bad faith" (a "willful act * * * which rightfully can be said to transgress equitable standards of conduct"). This requirement of proof has been uniformly applied in infringement actions be a majority of the circuits to claims of both fraud and lesser inequitable conduct. Moreover, proof of misconduct under either theory must be established by "clear, unequivocal and convincing" evidence. (185, 187, supra)

[portions of the text omitted]

II. RUTHENIUM AS A CATALYST

IR next maintains that Pfizer fraudulently claimed the use of ruthenium as a catalyst for preparing doxycycline. Pfizer's application stated on page 3: (24)

> The noble metal catalysts as employed in the present invention include platinum, palladium, rhenium, rhodium and ruthenium, as well as the known catalytic compounds thereof such as the oxides, chlorides, etc. . . . Examples of preferred catalysts are 5% palladium-on-carbon, 5% platinum-on-carbon, 5% rhodium-on-carbon, platinum chloride, palladium chloride, platinum oxide and ruthenium oxide . . .

Thereafter on page 4 appears:

> Rhodium is the preferred catalyst for the process of the present invention since it produces the highest overall yield of 6-epi-6-deoxy [alpha-6-deoxy] and 6-deoxytetracyclines [beta-6-deoxytetracyclines] the other noble metal catalysts are entirely operative to obtain both 6-epi-6-deoxy and 6-deoxytetracyclines.

On page 10 appears:

> In summary of the process of the present invention, it will be appreciated that it not only provides a convenient means for producing new and useful 6-epi-6-deoxytetracyclines but in addition, also produces known 6-deoxytetracyclines. Whereas the latter compounds may be produced by hydrogenation of a parent tetracycline antibiotic, i.e., one containing both a 6-methyl and a 6-hydroxy substituent, the procedure of the present invention is preferred since the yields thereof are substantially higher than those obtained by the known procedure.

IR maintains that:

> Blackwood, Stephens, Rennhard, Beereboom and von Schach . . . knew that they had been unsuccessful in using ruthenium as a catalyst for the methacycline hydrogenation process in six attempts over a more than seven months period prior to the filing of the doxycycline application and in seven additional attempts over a year-and-a-half period during the pendency of the application. (25)

The thrust of IR's argument is that Pfizer knew that ruthenium would not work as a catalyst but nevertheless included ruthenium in its application to prevent others from using it. Even this illogical approach, however, is not borne out by the evidence of the 13 early Pfizer experiments using ruthenium as a catalyst. Contemporaneous notebook entries of six experiments show that ruthenium catalyzed the reaction and five show that either beta or alpha 6-deoxy tetracycline was formed and on the papergrams of another ruthenium-catalyzed hydrogenation a spot was found in the doxycycline region. (26)

In his January 1961 monthly report, Dr. von Schach reported, "Although the results are not quite as clear cut as stated, we found that palladium and ruthenium catalyzed the hydrogenation of the double bond very slowly." (27) A detailed experiment-by-experiment analysis of the evidence on those referred to by IR as having failed (the contents of which are as set forth by Pfizer in its Post Trial Brief, pp. 129-133) does not permit the conclusion that ruthenium could not be used as a catalyst as claimed. This court concludes that Beereboom's monthly report of September 25, 1961, (28) stating that ruthenium will not work under the conditions used, was not intended to indicate that it could *not* work but that ruthenium did not produce commercially satisfactory yields. (29) This court reaches the same conclusion concerning Dr. Beereboom's and Dr. von Schach's joint report of December 18, 1961. (30) It, too, concerned itself with "the most practical synthetic routes to GS 3065" (doxycycline) and "concerned itself with the commercial preparation" of doxycycline. (31) The statement in that report that "catalysts such as ruthenium and Raney nickel . . . have failed to give the desired reaction" was intended to refer to the efficient production of larger quantities of doxycycline. This court accepts as true Dr. von Schach's statement that if that report were to be interpreted as stating that ruthenium had failed to catalyze the reaction and produce doxycycline, then such interpretation would be "clearly inaccurate". (32) This court finds that ruthenium could and would catalyze the reactions as claimed.

To confirm Pfizer's reference to the use of ruthenium was Dr. Murai's report that "a reasonable quantity of 6-(alpha)-

desoxytetracycline (0.3g) has been isolated from crude hydrogenation product of GS2330 (309)." (33) Ruthenium was the catalyst used in that hydrogenation. The only references in the patent showing yields of doxycycline are found in Examples 32 and 33 and both of those examples specifically recite the use of rhodium as the catalyst, which the patent explicitly stated was the preferred catalyst.

Nowhere in the file wrapper could this court find that Pfizer had made any representation regarding the yield of doxycycline if ruthenium was used as a catalyst. Examiner Adams was questioned in reference to the above-quoted sentence in the patent application beginning, "Rhodium is the preferred catalyst", et cetera: "Q. From reading the application during the time you were with the Patent Office, did you understand that ruthenium would also produce high yields of doxycycline?", Adams replied, "No." (34) He further testified that he would have understood from the application "that you could produce 6-epi and 6-deoxy tetracycline with the ruthenium catalyst in at least recoverable amounts, useful amounts." (35)

In the cross examination of Examiner Adams by IR's counsel Cohen, in response to the question: "[A]ssuming that *all* of Pfizer's experiments using ruthenium as a catalyst had failed to produce *any* alpha-6-deoxytetracycline", Adams stated that he would have rejected the process claims which included ruthenium as a catalyst. Upon re-direct examination, he was asked:

> Q. Now, I would like you to assume this set of facts:
>
> I would like you to assume that applicant's assignee and the applicant had conducted various experiments hydrogenating materials specified in the process claims of the doxycycline application, using ruthenium as the catalyst, under various conditions.
>
> I would like you to assume further that, under some reaction conditions, there did not appear to be evidence that the starting material was successfully hydrogenated.

Assume further that in other instances, within the scope of the process claims ruthenium did catalyze the reaction.

And assume that in some instances there was evidence that 6-epi-6-deoxytetracyclines were produced, including doxycycline.

Lastly assume that the applicant and applicant's assignee believed, based upon their knowledge and experience in the tetracycline art, that ruthenium would catalyze the hydrogenation, and that 6-epi-6-deoxy-tetracyclines, including doxycycline, would be produced thereby.

Now, if you had rejected claims 1, 4, 5 and 8 for inoperability and these facts were established in response to your rejection, would you have maintained the rejection?

* * * *

A. No. On the facts that they have stated, they have shown that ruthenium can catalyze the reaction, and they continued to believe that it can. (36)

Adams further testified:

Q. Mr. Adams, what was your view during the time of the prosecution of the doxycycline patent application regarding whether an applicant had an obligation to call to the attention of the Patent Office experimental failures if the applicant had a reasonable basis to believe the invention, as claimed, was operable and could be practiced through use of ordinary knowledge and skill in the art?

A. My view was he had no obligation to call such failures to the attention of the Patent Office.

Q. And what was your view regarding whether an applicant, who had experienced experimental fail-

ures, had to conduct successful experiments before he could claim the subject matter?

A. My view, then as now, is that there is no requirement to conduct any experiments, successful or otherwise, in order to obtain a patent application. That is it.

MR. COHEN: May I hear that question and answer, please.

(A portion of the record was read back by the reporter.)

Q. What do you mean by "to obtain a patent application?"

A. Should be "to obtain a patent." (37)

Conclusion

IR has failed to sustain its burden of proving its claim that Pfizer fraudulently claimed the use of ruthenium as a catalyst for preparing doxycycline by "clear, unequivocal and convincing evidence".

III. THE EXAMPLE 35 PROCESS

In connection with its claim of inoperability, IR maintained that Pfizer fraudulently claimed the Example 35 process for making 7-chloro doxycycline. Example 35 teaches the preparation of 7-chloro doxycycline (7-chloro-6-epi-6-deoxy-5-oxytetracycline) by hydrogenating 7-chloro methacycline (7-chloro-6-deoxy-6-damethyl-6-methylene-5-oxytetracycline). IR maintains that *all* of Pfizer's 25 experiments failed to make 7-chloro doxycycline by the Example 35 process or by analogous processes which should have also produced some 7-chloro doxycycline. IR points out that Beereboom's monthly reports of April and May 1961 state that "all attempts and efforts" to produce 7-chloro doxycycline by the Example 35 techniques were unsuccessful. (38) IR maintains that Pfizer had the duty to disclose its failure and any excuses therefore to the Patent Office. IR also maintains that Pfizer *knew* that the 7-chloro group in the tetracycline molecule was highly susceptible to

removal upon catalytic hydrogenation, but that Pfizer, with such knowledge, nevertheless retained Example 35 in the doxycycline application and issued claims embracing the Example 35 process for making 7-chloro doxycycline without disclosing those facts or its experimental failures to the Examiner. IR then maintains that Pfizer had no factual basis for a good faith belief that Example 35 worked. IR maintains that Pfizer's conduct in not presenting the facts of its failure to make 7-chloro doxycycline by Example 35 technique constitutes fraud upon and inequitable conduct before the Patent Office.

While IR lists 25 hydrogenations of 7-chloro methacycline which it claims failed to make 7-chloro-doxycycline, a detailed analysis of those experiments shows that most of them employed palladium catalyst which is not recommended for retention of the 7-chloro substituent. In all but one of the rhodium-catalyzed hydrogenations cited residual sulpher in the starting material poisoned the catalyst thus defeating the hydrogenation. (39) The purpose of Dr. von Schach's hydrogenations were specifically designed to produce methacycline by *removing* the 7-chloro substituent. (40) Dr. von Schach did not attempt to make 7-chloro doxycycline in any of those experiments. (41) In his November-December 1963 bimonthly report (one of three consecutive reports; IR 775-776-777), he reported several possibilities for the preparation of labeled GS 2876 were explored (see p. 147, Pfizer's PT3). Dr. Beereboom testified that a review of his early notebooks and monthly reports satisfied him that his experiments had produced indication of the formation of 7-chloro doxycycline. (42) Three of those experiments involved the hydrogenation of 7-chloro methacycline (GS2829) and the others involved hydrogenation fo 7, 11a-dichloro methacycline (GS2988) (both processes are disclosed in the doxycycline patent). (43) Although IR maintained that the hydrogenation of GS 2988 was "not an issue in this case" since the patent Example 35 starts with GS 2989, Dr. Beereboom testified:

> [I]t was well established that the first thing that would happen in the hydrogenation of GS 2988 would be

> the generation of GS 2989. So from the practical standpoint while I was conducting these experiments and it is my belief today the hydrogenation of 2938 is equivalent to the hydrogenation of 2989. (44)

It is to be noted that Patent Example 6B stops the hydrogenation of GS 2988 at the point where the 11a-chloro group has been removed and isolates GS 2989. Thus, as Dr. Blackwood testified, (45) the hydrogenation of GS2988 to 7-chloro doxycycline proceeds via the hydrogenation of GS2909. As Dr. Beereboom testified, he fully expected 7-chloro doxycycline to be formed by the process set forth in Example 35.

This court is satisfied that Pfizer's chemists had produced 7-chloro doxycycline by that method.

IR has placed great emphasis on statements made by Examiner Adams in the course of his examination by IR's counsel during deposition discovery. (46) IR's questions to Adams asked that he assume that Pfizer's Claims I, II, and IV included hydrogenating 7-chloro methacycline to make 7-chloro doxycycline, and that all of Pfizer's experiments thereon failed. Based upon that assumption, Adams testified that if Pfizer did not demonstrate it had in fact succeeded in preparing 7-chloro doxycycline by the Example 35 technique or demonstrate a factual basis for a good faith belief that 7-chloro doxycycline could be thus prepared, he would have made that rejection final. As indicated heretofore, Pfizer has satisfied this court that it had a factual basis for a "good faith" belief that 7-chloro doxycycline could be prepared by the Example 35 technique, and that it had in fact succeeded in so preparing it.

Even if this were not so, Examiner Adams thereafter testified that it is not necessary for an applicant to actually have produced a product or performed a process in order to claim it. He said,

> My understanding, at the time I was in the Office, at the time—at the present time, is that there is no requirement under U.S. Law for a patent applicant to have ever done anything in the laboratory to claim either a chemical process or a chemical product. 35 USC 112 requires only

that the applicant describe his invention and teach how to make and use the same. If an applicant believes that, in "carrying out a chemical process—in good faith believes that, in carrying out a chemical process, a certain result will follow and claims that process and/or the results that follow, to my knowledge, that is all that is required in order for him to file an application."

He continued,

> If, in spite of failure to make 7-halo, Pfizer scientists were still of a good-faith belief that the 7-halo derivative could be made by processes that they have described, then I think that would have been a—certainly a proper basis for them to have claimed the subject matter, and it also would have been a response to a rejection made.

* * * *

> . . . [T]he question I would have raised: [is] inoperability. And if the applicant comes back and says, "You are wrong. It works," then that is an adequate response. (47)

Underlying IR's charges of fraud or inequitable conduct in both the preceding ruthenium and this Example 35 issues is its claim that Pfizer had absolute duty to call the Examiner's attention to each and every failure. The 8th Circuit, in its opinion preceding this trial,[8] stated:

> In the instant case, the District Court adopted a far-reaching interpretation of the doctrine (that parties to a Patent Office proceeding have an *uncompromising duty* to report to it all facts concerning possible fraud or inequitableness underlying the application) emanating from what the court described as an obligation on Pfizer's part to disclose to the Patent Office any fact that "may be relevant to an issue of patentability." Further, the court held that the defendants in proving Pfizer's breach of this obligation were not required to prove that Pfizer intended to deceive the patent examiners, and that Pfizer's claims of good faith are immaterial and do not create genuine issues of fact. We believe this interpretation imposes an unwork-

[8] Pfizer, Inc., v. IR Corp., 538 F.2d 180, 185, supra.

> able standard of conduct upon the patent applicant and expands the inequitable conduct defense beyond legitimate limits . . . to result in refusal to enforce a patent, the misconduct must be accompanied by "some element of wrongfulness, willfulness, or bad faith" . . . .

This court finds nothing arising out of the fact that Pfizer did not advise the Patent Office of *all* of its experiments, good or bad, involving either ruthenium or Example 35 that manifested any element of wrongfulness, willfulness, or bad faith required for patent invalidation.

IR has failed to sustain its burden of proving its claim that Pfizer fraudulently claimed the Example 35 process for making 7-chloro doxycycline by "clear, unequivocal and convincing" evidence.

[portions of the text omitted]

VII. ANTIBACTERIAL ACTIVITY OF DOXYCYCLINE

While it is now known that doxycycline is a superior broad spectrum antibiotic exhibiting a wide order of antibacterial activity against a wide range of disease-causing microorganisms,[9] nevertheless IR maintains that Pfizer fraudulently misrepresented the antibacterial activity of doxycycline. It is IR's "position that, in documenting the superior activity of doxycycline as compared with the McCormick compound, Pfizer deliberately exaggerated doxycycline's antibacterial activity in every conceivable way, thereby precluding the patent examiners from fairly evaluating the relative activities of the respective compounds." (195) IR further maintains that these exaggerations were deliberately aimed at forging "the chain binding the examiners to Pfizer's non-obviousness argument." (196) IR points out that during the prosecution Pfizer "harped upon the substantial 'differences in properties', (197) the 'differences in kind', (198) and the 'differences of approximately 36-fold' ". (199)

The file wrapper shows that Examiner Berg in 1962 had withdrawn his prior rejection of Pfizer's claims upon receipt of

[9] See "Background", pages 1-2.

the English and McBride affidavits concerning the antibacterial activity of doxycycline stating that the affidavits "had been carefully considered and are deemed persuasive in overcoming the rejection." (200)

Even though the file wrapper on its face negates IR's claim that the patent Examiners were deliberately misled by the English and McBride affidavits of antibacterial activity into granting Pfizer's claims, IR insists that Pfizer fraudulently exaggerated and magnified the "showing of antibacterial activity in an effort to dramatize its claim of unexpected and unobvious advantage." (201) The focal point of IR's attack is its claim that by disclosing this doxycycline was active in vitro against staph 400, thereby Pfizer suggested its possible activity in vivo against strains that were resistant to tetracycline. IR claims that by simultaneously withholding doxycycline's inactivity in vivo against staph 400, then and thereby Pfizer misrepresented doxycycline's antibacterial activity.

Pfizer's Dr. Von Schach stated that Pfizer's scientists regarded the demonstration of in vitro activity of a prospective antibacterial compound as indicating the possibility of in vivo activity. (202) Dr. English testified that he believed that an indication of in vitro activity against the tetracycline resistant strain warranted further work to determine whether the compound additionally exhibited in vivo activity against the same strain. (203) Pfizer's scientists tested doxycycline against staph 400. IR's thesis is that since Pfizer's scientists found, and it was so reported to the Examiner, that doxycycline showed activity against staph 400 in vitro, while Pfizer's report to the Patent Office did *not* state that its tests in vivo had *not* shown antibacterial activity, ergo Pfizer deliberately misled the Examiners into inferring that it was in fact potentially active in vivo. Although IR's argument has an abstract plausibility, nowhere in the record is there any indication that any of the Examiners, inferentially or otherwise, were led to believe that doxycycline was active in vivo against staph 400. The English and McBride affidavits were filed to compare the activity of doxycycline with that of the prior art McCormick compound. The McCormick compound had not been tested against staph 400 in vivo. (204)

Nowhere in the record is there any representation that doxycycline was active in vivo in each and every microorganism against which it manifested an in vitro activity.

On the record, this court agrees with Dr. English: "There is no reason to believe, based on an MIC that a compound will have activity in vivo." (205) Dr. Woodward, when asked whether in vivo activity necessarily follows from in vitro activity, said: "Good Lord, no; I wish it did." (206)

Ir response to a question as to whether it was his understanding during the prosecution of the doxycycline patent that an antibiotic compound displaying substantial in vitro activity against a particular microorganism was necessarily active in vivo against the same microorganism, Adams answered: "My understanding was that you could not [necessarily] predict activity from any in vitro activities . . ." and continued to state that in passing the doxycycline patent to issue, he did not make any assumption whatsoever that doxycycline was active in vivo against each and every microorganism against which it displayed in vitro activity. Moreover, Examiner Adams gave this testimony:

> Question: Now if you had been specifically informed that doxycycline was inactive in vivo against that same staph 400, would it have made any difference to you in your decision to allow the product claims in this case?
>
> Answer: No, it would not have made any difference. (207)

In IR's Dr. Mitscher's patent application on 5a, 6-anhydrotetracyclines filed in February of 1964 and issued in 1966 states: "The novel compounds of the present invention are useful as antibacterial agents since they are biologically active and possess broad spectrum antibacterial activity." The application then represents the in vitro activity (MIC values) of several of the compounds. (208) Dr. Mitscher testified that the compounds claimed in the application had no significant in vivo activity. (209) Nowhere in Dr. Mitscher's patent application or its file wrapper is that fact disclosed.

IR admits that doxycycline "had superior in vitro antibacterial activity than the prior art (McCormick) compound" and that "doxycycline had greater antibacterial activity than the McCormick compound." (210) This court has carefully reviewed the file wrapper (211) and all of the representations made therein regarding the antibacterial activity of doxycycline, as well as the testimony relating thereto, and finds that Dr. English's affidavit did not exaggerate actually or inferentially the antibacterial activity of doxycycline in vitro. (212) This court has also again reviewed the affidavit of Dr. McBride (213) directed to doxycycline's in vivo activity, as well as the testimony regarding the same (214) and finds that while MIC values, like other biological measurements, are subject to some variation and thus not precisely reproducible they provide those skilled in the art with highly valuable information particularly for comparative purposes. (215) The McBride test demonstrated that doxycycline is a much more active antibiotic than the McCormick compound. Dr. English's 1964 test, made for the purpose of presenting Pfizer's claims to the F.D.A., did not use the same controls as Dr. McBride, but instead, Dr. English's 1964 test involved staph 5 mp (mouse-passed) and multiple dosing. (216) The purpose of mouse-passing is to render the culture more virulent and generally a higher dose of antibiotic is required to inhibit infection. Thus, Dr. English's data based on mouse-passed cultures is not valid comparison with data derived from non-mouse-passed cultures. (217) Both Dr. McBride's 1961 test and Dr. English's 1964 test demonstrate that doxycycline is in fact vastly superior to the McCormick compound both in vitro and in vivo.

If more were needed to indicate that IR has failed to carry out its burden of proof, Examiner Adams testified that he did not rely on the affidavits of either English or McBride in deciding to issue the patent:

> With LeGrice and Brown, the requirement for a reference was it had to be enabling. There was no reference known to me . . . which taught how to make the 6-epi 6-deoxy tetracyclines . . . [therefore] they were

> unobvious . . . There was no prima facie case of obviousness and therefore no requirement for the applicant to show superiority over any known compounds.

Adams also testified that a showing that doxycycline was 8 to 10 times more active than the McCormick compound would have been more than sufficient to establish nonobviousness. (219)

IR has failed to fulfill its burden of proving that Pfizer's actions in any way fraudulently misrepresented the antibacterial activity of doxycycline or that Pfizer failed to fulfill its duty of full disclosure and absolute candor to the Examiners.

[portions of the text omitted]

Pfizer's patent #3,200,149 is VALID.

Plaintiff's counsel will prepare the partial judgment.

DATED: Honolulu, Hawaii, June 6, 1980

UNITED STATES DISTRICT JUDGE

CODE OF FEDERAL REGULATIONS (PATENT OFFICE RULES), 37 CFR 1.56(a)

§1.56 Duty of disclosure; striking of applications.

(a) A duty of candor and good faith toward the Patent and Trademark Office rests on the inventor, on each attorney or agent who prepares or prosecutes the application and on every other individual who is substantively involved in the preparation or prosecution of the appliction and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application. All such individuals have a duty to disclose to the Office information they are aware of which is material to the examination of the application. Such information is material where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent. The duty is commensurate with the degree of involvement in the preparation or prosecution of the application.

[42 FR 5593, Jan. 28, 1977]

MANUAL OF PATENT EXAMINING PROCEDURE, SECTION 2001.05

2001.05 Materiality Under 37 CFR 1.56(a) [R-2]

Subsection 1.56(a) provides,

> "All such individuals have a duty to disclose to the Office information they are aware of which is *material to the examination* of the application (emphasis added)."

"Material" connotes something more than a trivial relationship. It appears commonly in court opinions. Subsection 1.56(a) elucidates,

> "Such information is material where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent."

This sentence paraphrases the definition of materiality used by the Supreme Court in TSC Industries v. Northway, 426 U.S. 438, 48 L.Ed. 2d 757, 96 S.Ct. 2126, 44 U.S.L.W. 4852 (1976). Although in that case the court was concerned with rules promulgated by the Securities and Exchange Commission, the Court's articulation of materiality is believed consistent with the prevailing concept that has been applied by lower courts in patent cases.

The definition of materiality in §1.56 has to be interpreted in the context of patent law rather than securities law. Principles followed by courts in securities cases should not be translated to patent cases automatically. It is noteworthy, however, that in formulating the definition of materiality in TSC Industries the Supreme Court noted that the standard of materiality should not be so low that persons would be "subjected to liability for insignificant omissions or misstatements," or so low that the fear of liability would cause management "simply to bury the shareholder in an avalanche of trivial information a result that it is hardly conducive to informed decision making."

Although the third sentence of §1.56(a) refers to decision of an examiner, the duty of disclosure applies in the same

manner in the less common instances where the official making a decision on a patent application is someone other than an examiner, e.g., a member of the Board of Patent Interferences or the Board of Appeals. This is implicit in the duty "of candor and good faith" toward the "Office" that is specified in the first sentence of §1.56(a).

The Court in Norton v. Curtiss, 433 F.2d 779, 167 USPQ 532, 544 (C.C.P.A. 1970) characterized "materiality" as being of "critical concern;" and indicated,

> "[I]n patent cases, materiality has generally been interpreted to mean that if the Patent Office had been aware of the complete or true facts, the challenged claims would not have been allowed."

However, the court then indicated at page 545 of the USPQ citation its concern that "materiality" not be defined too narrowly by stating that

> "the above test cannot be applied too narrowly if the relationship of confidence and trust between applicants and the Patent Office is to have any real meaning. Findings of materiality should not be limited only to those situations where there can be no dispute that the true facts, or the complete facts, if they had been known, would most likely have prevented the allowance of the particular claims at issue or alternatively, would provide a basis for holding those claims invalid."

* * * * *

> "It is our view that a proper interpretation of the "materiality" element of fraud in this context must include therein consideration of factors apart from the objective patentability of the claims at issue, particularly (where possible) the subjective considerations of the examiner and the applicant. Indications in the record that the claims at issue *would* not have been allowed but for the challenged misrepresentations must not be overlooked due to any certainty on the part of the reviewing tribunal that the claimed invention, viewed objectively, *should* have been

patented. If it can be determined that the claims would *not* have been allowed *but for* the misrepresentation, then the facts were material regardless of their effect on the objective question of patentability."

Other courts have also treated the question of "materiality." Thus, in In re Multidistrict Litigation Involving Frost Patent, 185 USPQ 729, 741 (D.Del. 1975), the court characterized the question of "materiality" as follows:

"Some variation of the so-called "but for" test has appeared in nearly every patent fraud case.

* * * * *

"In other words, a finding of fraud is warranted if, but for the misconduct of the patent applicant, the patent would not properly have issued. This is what has been referred to as an "objective but for test".

* * * * *

"The second "but for" test is the so-called "subjective test". This test requires a court to examine the effect which fraudulent representations had upon the examiner. If misrepresentations caused the examiner to issue the patent, then this kind of "but for fraud" will be found.

* * * * *

"The final "but for" test has been labeled "the but it may have" test, i.e., courts look to whether the misrepresentations made in the course of the patent prosecution may have had an effect on the examiner.

* * * * *

"Hence, in this Circuit, a misrepresentation which makes it "impossible for the Patent Office fairly to assess [the] application against the prevailing statutory criteria . . . will, given the requisite intent, lead to a finding of invalidity."

CERTIFICATE OF SERVICE

It is hereby certified that true and correct copies of this PETITION FOR WRIT OF CERTIORARI have been served upon attorneys for respondent on November 29, 1982, by mailing the copies thereof, contained in sealed envelopes, first-class postage prepaid, addressed to said attorneys as follows:

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No. 82-909

IN THE

Supreme Court of the United States

October Term, 1982

INTERNATIONAL RECTIFIER CORPORATION, RACHELLE LABORATORIES ITALIA S.p.A., RACHELLE LABORATORIES, INC. and RACHELLE PHARMACEUTICALS INTERNATIONAL, S.A.,

Petitioners,

vs.

PFIZER INC.,

Respondent.

On Certiorari to the United States Court of Appeals for the Ninth Circuit.

BRIEF IN OPPOSITION TO PETITION FOR WRIT OF CERTIORARI.

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Question Presented.

Respondent Pfizer Inc. ("Pfizer") submits that the question presented for review by the International Rectifier petitioners ("IR") seeks an advisory opinion of this Court with respect to an issue which is inappropriate for resolution since the judgment below is clearly sustainable on other independent grounds not raised by petitioners. Therefore, pursuant to Rule 34.2 of this Court, Pfizer restates the questions as follows:

(1) Should this Court review by *certiorari*, a decision which is clearly sustainable on independent grounds not raised by the Petition?

(2) Was affirmance of the District Court's decision proper where the Trial Court applied the standard of materiality prevailing throughout the circuits and found as a fact that the information in question was not even pertinent, much less material to patentability?

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vs.

PFIZER INC.,

Respondent.

BRIEF IN OPPOSITION TO PETITION FOR WRIT OF CERTIORARI.

I.
STATEMENT OF THE CASE.

The statement of the case submitted by IR is inaccurate and incomplete and the following statement is provided in accordance with Rule 34.2.

Pfizer's* patent in suit describes and claims a broad spectrum antibiotic, doxycycline, and a process for its production. Doxycycline was invented in Pfizer's laboratories, following years of costly research seeking improved antibiotics, and has proved to be one of the most effective and successful

*This information is provided in compliance with Rule 28.1: Pfizer Taito Co., Ltd.; Pfizer Quigley Korea Ltd.

antibiotics in mankind's continuing struggle against disease. As petitioner IR puts it, "in the clinics, where other antibiotics fail, Doxycycline often succeeds . . . ." Referring specifically to the earlier prior art tetracyclines, IR proclaimed "this one surpasses them all."

Pfizer's patent which was issued in 1965, and expired in August 1982, was respected by the entire pharmaceutical industry with the exception of IR which commenced its infringement in 1973. Pfizer initiated this action immediately and IR's answer admitted infringement and pleaded the usual defenses of invalidity and unenforceability including numerous assertions that the patent would not have issued but for fraud on the Patent Office.

Following lengthy and exhaustive pretrial proceedings, trial commenced in October 1978, and proceeded "almost uninterruptedly" until March 1979. The Honorable Martin Pence, sitting by designation at the agreement of the parties, heard and evaluated highly complex technical testimony of nine witnesses who testified about some 2,000 exhibits, including hundreds of pages of original laboratory notebook entries of the four inventors and other scientists, in over 6,000 pages of transcript. In addition, ten feet of deposition testimony, including extensive testimony by the Patent Office Examiner who allowed the doxycycline patent in suit was introduced. After extensive post-trial briefing, the District Court issued its 97-page decision holding the patent valid in June 1980.[1]

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[1]Since Petitioners included only selected portions of the District Court's decision in the appendix to the Petition, and by careful ellipses *excluded* the Court's discussion of the applicable law, including cases on which IR now relies, all in contravention of Rule 21.1(k), Respondent has reproduced the decision in its entirety in the appendix hereto. The appendix to the Petition is referred to herein as "A" and Respondent Pfizer's appendix included herein is referred to as "R.A." Because this Petition borders on the frivolous and due to IR's disregard of the Rules of this Court, we request that the Court consider application of Rule 50.7.

The decision sets forth extensive and detailed findings of fact based on the Trial Court's exhaustive consideration of the evidence, including testimony of the inventors, the attorney who prosecuted the application for the patent in the Patent Office and that of the Patent Examiner who examined the patent application and allowed the patent. The Trial Court demonstrated complete comprehension of the technical subject matter in resolving highly complex technical issues of organic and stereochemistry, catalytic hydrogenation, microbiology, pharmacokinetics and medicine after hearing the testimony of medical and scientific experts including a Nobel Laureate in chemistry. The Trial Court held that the doxycycline invention was unobvious and that the patent was valid. The Court's decision included a detailed analysis of all the evidentiary facts including technical facts and the law of fraud and unclean hands as established by this Court and followed by the Ninth Circuit (and the other circuits) as well as the Court of Customs and Patent Appeals (now the Court of Appeals for the Federal Circuit hereinafter C.A.F.C.). The Trial Judge specifically relied upon this Court's decision in *Precision Instrument Mfg. Co. v. Automotive Maintenance Mach. Co.*, 324 U.S. 806 (1945) and the decision of the C.C.P.A. in *Norton v. Curtiss*, 433 F.2d 779 (CCPA 1970) in holding that IR failed to carry its burden of proving that Pfizer misrepresented or concealed from the Patent Office any prior art, fact or information material or even pertinent to patentability.

The Proceedings in the Ninth Circuit.

On appeal to the Ninth Circuit, IR abandoned many of its prior defenses, claimed the Trial Court's findings were clearly erroneous, and directed its appeal to obviousness, inventorship, double patenting and certain fraud defenses.

Each issue was again resolved against IR by the Ninth Circuit.

In its brief on appeal, IR asserted that the materiality standard applied by the Ninth Circuit in patent fraud cases was whether the withheld information "might affect" the patentability of the invention (A-3). IR acknowledged that in order to establish a defense of fraud or inequitable conduct, it must not only establish materiality but IR also recognized that: "Unquestionably it is incumbent on IR to demonstrate Pfizer's *scienter* through evidence of gross negligence, reckless conduct or bad faith." [Emphasis supplied.] (IR Reply Br. p. 17.) IR does not quarrel with the Ninth Circuit's resolution of the issue of scienter on appeal; indeed, in this Court, IR never even mentions scienter, bad faith or willfulness — an essential element of its defense. Therefore, IR seeks an advisory opinion of this Court on the standard of materiality, while conceding that it has failed to establish another crucial element of its case. For this reason alone, the Petition should be denied.

The Ninth Circuit affirmed the judgment below "essentially upon the basis of the findings of fact and the carefully reasoned opinion of the District Judge." (A-2). The Court of Appeals specifically rejected IR's contention that the District Court opinion was contrary to the materiality standard enunciated by the Ninth Circuit in three prior cases.[2] The Appellate Court held that the "District Court's opinion is consistent with the standards announced in those cases" and then addressed the "might affect" the patentability standard argued by IR:

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[2]*W. R. Grace & Co. v. Western U.S. Industries, Inc.*, 608 F.2d 1214, 1218 (9th Cir. 1979), *cert. denied*, 446 U.S. 953 (1980); *Maurice A. Garbell, Inc. v. Boeing Co.*, 546 F.2d 297 (9th Cir. 1976), *cert. denied*, 431 U.S. 955 (1977); *Monolith Portland Midwest Co. v. Kaiser Aluminum & Chemical Corp.*, 407 F.2d 288 (9th Cir. 1969).

> In judging whether misrepresentations made before the Patent Office rise to the level of fraud or inequitable conduct that would justify invocation of the maximum of unclean hands, we have not adopted, as appellants argue, a definition of materiality that encompasses any information that "might affect" the patentability of the claimed invention. Rather, we have adhered to the proposition that false statements or omissions are material so as to constitute fraud before the Patent Office when such statements or omissions were a "*substantial* cause" of the patent grant or a "*crucial factor*" in obtaining the patent. See *W. R. Grace & Co., Inc.*, 608 F.2d at 1218; *Cataphote Corporation v. DeSoto Chemical Coatings, Inc.*, 450 F.2d 769, 773 (9th Cir. 1971), *cert. denied*, 408 U.S. 929 (1972); *Monolith Portland Midwest Co.*, 407 F.2d at 296. [Emphasis in original.] (A.3).

The Ninth Circuit agreed with the Trial Court's conclusion that IR failed to establish by clear and convincing evidence that Pfizer had misrepresented or concealed prior art, facts, or information material to patentability.

> The evidence clearly supports a finding that the information withheld by Pfizer was not a crucial factor or a substantial cause of the patent grant and, therefore, the District Court's conclusion that the information was not material is not error. (A-4).

Those decisions are clearly correct and nothing therein warrants review by this Court by *certiorari*.

II.
ARGUMENT.

Summary of the Argument.

The Petition presents no special or important question.

1. The decisions of the District Court and the Court of Appeals are correct without regard to the question of ma-

teriality sought to be raised by the Petition since Petitioners failed to establish intent, another independent prerequisite to fraud or inequitable conduct.

2. The Ninth Circuit affirmed the judgment of the District Court on the basis of its detailed factual findings, including those made with respect to the charges of fraud and inequitable conduct, correctly applying the standards governing such defenses as established by this Court and followed by the circuits. There is no conflict between the circuits as to any point of law relied upon by the Ninth Circuit. The fact that there is agreement between the Ninth Circuit and the Court of Appeals for the Federal Circuit (formerly the CCPA) confirms that there is no issue warranting review by this Court on *certiorari*.

ARGUMENT.

1. The Decisions Below Are Sustainable on Independent Grounds Not Raised by the Petition.

In addition to failing to prove materiality, IR failed to establish scienter — wrongfulness, willfulness or bad faith — another independent prerequisite of fraud and unequitable conduct. *Carpet Seaming Tape Licensing Corp. v. Best Seam, Inc.*, 616 F.2d 1133, 1138 (9th Cir. 1980); *Pfizer Inc. v. International Rectifier Corp.*, 538 F.2d 180, 186 (8th Cir. 1976), *cert. denied*, 429 U.S. 1040 (1977).

Although IR admitted that it is incumbent upon it to demonstrate Pfizer's scienter through evidence of gross negligence, reckless conduct or bad faith (IR Reply Br. p. 17), IR's Petition does not even mention scienter. Since IR failed to establish any element of wrongfulness, willfulness, or bad faith, another prerequisite of fraud or unclean hands, the decision below is clearly correct without regard to the definition of materiality. Under such circumstances the definition of materiality is not decisive of the case and this fact alone warrants denial of the Petition. *McCarthy v. Bruner*, 323 U.S. 673, 674 (1944).

Thus, IR seeks an advance expression of opinion from this Court upon a hypothetical set of facts. This Court has consistently refused to render such advisory opinions. *United States v. Fruehauf*, 365 U.S. 146, 157 (1961); *Flast v. Cohen*, 392 U.S. 83, 95-96 (1968).

2. Affirmance of the District Court's Decision Was Proper Since the District Court Applied the Standard of Materiality Prevailing Throughout the Circuits and Found as a Fact That the Information in Question Was Not Even Pertinent, Much Less Material to Patentability.

IR would have this Court believe that the decisions below were based on the application of a subjective "but for" materiality test. (Pet. 3).[3] This is simply inaccurate. The Trial Court found as a fact that the information was not even pertinent to patentability. Those findings were sustained on appeal and are not clearly erroneous.

The judgment of validity came to the Ninth Circuit buttressed by a 97-page opinion, embodying findings of fact and conclusions of law prepared by the Trial Judge who, during months of trial, observed the witnesses, judged their credibility, and resolved the factual issues, including those underlying the determination of intent, good faith, willfulness and materiality.

IR's assertions of fraud center on information concerning the inactivity of doxycycline *in vivo* (in a living organism) against one of many microorganisms, and operability of claimed processes involving certain allegedly unsuccessful preliminary experiments by Pfizer's scientists to use ruthenium as a catalyst and to make 7-chloro doxycycline. (Pet. 2-3). IR contends, incorrectly, that the District Court and the Court of Appeals applied a subjective but for materiality standard in determining that information concerning these matters was not material. (Pet. 3).

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[3]The Petition is referred herein as "Pet."

On the contrary, the District Court made elaborate and detailed factual findings with respect to each of these issues (R.A. 22-26 (ruthenium), R.A. 27-31, (7-chloro doxycycline), and R.A. 79-83 (antibacterial activity), after considering all the evidence, including the testimony of the inventors, a Nobel Laureate in Chemistry, the attorney who prosecuted the patent application in the Patent Office, a former Commissioner of Patents, and the Patent Examiner who allowed the patent. The examiner testified that a patent applicant has no obligation to call experimental failures to the attention of the Patent Office if he has a reasonable basis to believe the claimed invention is operable and can be practiced through the use of ordinary skill in the art. (R.A. 25-26, 29). It is of course self-evident that a single successful experiment proves a process operable. The Trial Court found that *prior to filing* the patent application, Pfizer had *successfully* used ruthenium (R.A. 22-23), and had actually produced 7-chloro doxycycline by the disclosed processes. (R.A. 27-28). The Court also specifically found that Pfizer had a good faith belief as to the operability of the disclosed processes. (R.A. 23, 29). The Court found:

> [N]othing arising out of the fact that Pfizer did not advise the Patent Office of *all* its experiments, good or bad, involving either ruthenium or Example 35 [7-chloro doxycycline] that manifested any element of wrongfulness, willfulness, or bad faith required for patent invalidation. (R.A. 30).

The District Court also found that IR had failed to prove its claim that Pfizer fraudulently claimed the use of ruthenium or 7-chloro doxycycline by "clear, unequivocal and convincing evidence" (R.A. 26, 30). *See United States v. American Bell Telephone Co.*, 167 U.S. 224, 251 (1897).

The Trial Judge made similar findings with respect to IR's fraud contentions regarding antibacterial activity. He

found that IR admitted that doxycycline was clearly superior to the closest prior art compound (R.A. 81), that the data submitted to the Patent Office fully and accurately represented the "vastly superior" antibacterial activity of doxycycline (R.A. 82), and that scientists skilled in the art and the Patent Examiner as well, understood that *in vivo* activity of a compound cannot be inferred from its *in vitro* activity. (R.A. 80). Therefore, inactivity against one microorganism *in vivo* was not material to patentability. Understandably, the Trial Judge also relied on the Patent Examiner's testimony that such information "would not have made any difference" (R.A. 81). It cannot be denied that such evidence is highly probative, no matter what the standard of materiality. Based on these findings, the Trial Court held:

> IR has failed to fulfill its burden of proving that Pfizer's actions in any way fraudulently misrepresented the antibacterial activity of doxycycline or that Pfizer failed to fulfill its duty of full disclosure and absolute candor to the Examiners. (R.A. 83).

The District Court then exhaustively analyzed and properly applied the law of fraud on the Patent Office as established by this Court and followed by the circuit courts. (R.A. 93-99).[4] The Court concluded:

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[4]*Precision Instrument Manufacturing Co. v. Automotive Maintenance Machinery Co.*, 324 U.S. 806 (1945); *Pfizer, Inc. v. International Rectifier Corp.*, 538 F.2d 180 (8th Cir. 1976), *cert. denied*, 429 U.S. 1040 (1977); *Monsanto Co. v. Rohm & Haas Co.*, 456 F.2d 592, 598, 601 n. 14 (3d Cir.), *cert. denied*, 407 U.S. 934, 92 S.Ct. 2463, 32 L.Ed.2d 817 (1972); *Kolene Corp. v. Motor City Metal Treating, Inc.*, 440 F.2d 77, 83 (6th Cir.), *cert. denied*, 404 U.S. 886, 92 S.Ct. 203, 30 L.Ed.2d 169 (1971); *Scott Paper Co. v. Fort Howard Paper Co.*, 432 F.2d 1198, 1204-05 (7th Cir. 1970), *cert. denied*, 401 U.S. 913, 91 S.Ct. 882, 27 L.Ed.2d 812 (1971); *Norton v. Curtiss*, 433 F.2d 779, 793-95, 57 CCPA 1384 (1970) (interference proceeding to challenge priority of invention and strike application for fraud); *Acme Precision Products, Inc. v. American Alloys Corp.*, 484 F.2d 1237, 1239-40 (8th

(footnote continued on following page)

In its review of the multitude of cases cited by plaintiff and defendant, as well as the cases referred to in those cases, this court has found no precedent which on its facts would apparently mandate that the proven acts of Pfizer in *this* case should be construed as fraudulent or as violating the duty of candor as postulated by The Court in Precision Instrument, supra, or as construed by the Court of Customs and Patent Appeals in Norton, supra. [Emphasis original.]

. . . .

[IR] has failed to carry its burden of proving that Pfizer misrepresented or concealed from the Patent Office any prior art, fact, or information *material or pertinent* to patentability. IR has failed to carry its burden of proving that Pfizer failed to exercise the degree of candor and good faith required by Precision Instrument Co.,

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Cir. 1973) (infringement claim dismissed due to deliberate misrepresentations and patentee's knowledge of fraudulent procurement); *Cataphote Corp. v. DeSoto Chemical Coatings, Inc.*, 450 F.2d 769, 772 (9th Cir. 1971), *cert. denied*, 408 U.S. 929, 92 S.Ct. 2497; 33 L.Ed.2d 341 (1972) (antitrust counterclaim alleging fraud); *Nashua Corp. v. RCA Corp.*, 431 F.2d 220, 227 (1st Cir. 1970) (claim for refund of royalties due to fraud in procurement); *Triumph Hosiery Mills, Inc. v. Alamance Industries, Inc.*, 299 F.2d 793, 796 (4th Cir.), *cert. denied*, 370 U.S. 924, 82 S.Ct. 1566, 8 L.Ed.2d 504 (1962); *Edward Valves, Inc. v. Cameron Iron Works, Inc.*, 286 F.2d 933, 947, *modified on other grounds*, 289 F.2d 355 (5th Cir.), *cert. denied*, 368 U.S. 833, 82 S.Ct. 55, 7 L.Ed.2d 34 (1961); *Haloro, Inc. v. Owens Corning Fibreglas Corp.*, 105 U.S. App. D.C. 320, 266 F.2d 918 (1959); *Parker v. Motorola, Inc.*, 524 F.2d 518 (5th Cir. 1975); *Schnadig Corp. v. Gaines Mfg. Co.*, 494 F.2d 383, 393 (6th Cir. 1974); *Monsanto Co. v. Rohm & Haas Co.*, 456 F.2d 592, 598, 601 n. 14 (3d Cir.), *cert. denied*, 407 U.S. 934, 92 S.Ct. 2463, 32 L.Ed.2d 817 (1972); *Carter-Wallace, Inc. v. Davis-Edwards Phamacal Corp.*, 443 F.2d 867, 882 (2d Cir. 1971); *Scott Paper Co. v. Fort Howard Paper Co.*, 432 F.2d 1198, 1203-05 (7th Cir. 1970), *cert. denied*, 401 U.S. 913, 91 S.Ct. 882, 27 L.Ed.2d 812 (1971). *See also Iron Ore Co. v. Dow Chemical Co.*, 500 F.2d 189, 195 (10th Cir. 1974); Carney, Misrepresentations Before the Patent Office; Antitrust and Other Legal Effects, 12 B.C.Ind. & Com.L.Rev. 1005 (1971).

> supra or Norton, supra. [Emphasis supplied.] (R.A. 98-99).

In holding that nothing "material or *pertinent* to patentability" was withheld, it is evident that the Trial Court found that the information in question was not such as to have any possible effect on the issuance of the patent. Clearly, information which is not even "pertinent" satisfies a far lesser standard than the "but for" standard IR alleges the District Court applied. In view of the evidence clearly supporting the Trial Court's decision, the Ninth Circuit correctly affirmed the judgment below on the "basis of the findings of fact and the carefully reasoned opinion of the District Judge."

In the proceedings below, IR urged that the standard of materiality adopted by the Ninth Circuit was whether the information in question "might affect" the patentability of the invention. (A-3). The Ninth Circuit properly rejected IR's contention that it had adopted such a vague and loose standard: "[W]e have not adopted, as the appellants argue, a definition of materiality that encompasses any information that 'might affect' the patentability of the claimed invention." (A-3).

Interestingly, like the Ninth Circuit in the present case, this Court in *TSC Industries, Inc. v. Northway, Inc.*, 426 U.S. 438 (1976), in the context of securities transactions, specifically rejected "*might* consider important" as a standard of materiality:

> We agree with Judge Friendly, speaking for the Court of Appeals . . . that the "might" formulation is "too suggestive of mere possibility, however unlikely." (426 U.S. at 449)

In *TSC Industries* this Court adopted as a materiality standard in securities transactions, that enunciated in SEC Rule 14a-9, wherein an "omitted fact is material if there

is a substantial likelihood that a reasonable shareholder would consider it important in deciding how to vote.''[5] (426 U.S. at 449).

Here, the examiner testified and the Court found, that the omitted information would not have made any difference. (A-4). IR was unable to convince either court that this, or any examiner would consider such information important. Thus, the Courts below applied the standard of materiality urged by IR but the issue was resolved factually against IR. The Ninth Circuit held that such findings were not clearly erroneous. (A-4).

IR's suggestion in the Petition that the standard of materiality adopted by this Court in *TSC Industries* is different from that applied by the Courts below is in error. The Patent Office, in promulgating the materiality standard to its examiners through the Manual of Patent Examining Procedures, refers specifically to this Court's decision in *TSC Industries* and states:

> [T]he Court's articulation of materiality is believed consistent with the prevailing concept that has been applied by lower courts in patent cases. (A-24).

The Patent Office then proceeds to quote at length from the CCPA's decision in *Norton v. Curtiss*, 433 F.2d 779 (CCPA 1970), as an example of the application of the prevailing concept by lower courts in patent cases. (A-25-26).

Significantly, the District Court in this case specifically relied on *Norton v. Curtiss*, and quoted at length from that decision in rejecting IR's contentions, although that fact no

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[5]The Manual of Patent Examining Procedure, § 2001.05 (A-24) while noting that Patent Office Rule 56 (37 C.F.R. 1.56 (a)) paraphrases the definition of materiality used by this Court in *TSC Industries* states that ''the definition of materiality in § 1.56 has to be interpreted in the context of patent law rather than securities law'' and then cites and quotes at length from *Norton v. Curtiss*, 433 F.2d 779 (C.C.P.A. 1970).

where appears in IR's appendix to the Petition due to IR's selective ellipses. (RA 95-98). The Ninth Circuit referred to those portions of Judge Pence's decision in affirming. (A-4).

After noting that in addition to materiality, culpability for fraud or unclean hands also requires a "showing of wrongfulness, willfulness, bad faith, or gross negligence, proved by clear and convincing evidence," the Court of Appeals stated:

> The District Court's opinion in this case was consistent with these standards. It found that the appellants failed to show by clear and convincing evidence that Pfizer misrepresented or concealed prior art, facts, or information *material or pertinent to patentability* . . . . In making this determination the District Court properly relied on the patent examiner's testimony that he was not misled by Pfizer's representations . . . and that certain information Pfizer withheld "would not have made any difference" to the patent examiner's decision . . . . The evidence clearly supports a finding that the information withheld by Pfizer was not a crucial factor or a substantial cause of the patent grant and, therefore, the District Court's conclusion that the information was not material is not error. (A-4).

The District Court followed the law governing fraud established by this Court and followed by the circuit courts. The District Court quoted the Eighth Circuit Court of Appeals in *Pfizer Inc. v. International Rectifier Corp.*, 538 F.2d 180 (8th Cir. 1976), *cert. denied*, 429 U.S. 1040 (1977), an earlier decision on proceedings in this case:

> The principle that a defendant in a patent infringement action may interpose as a complete defense the patentee's failure to deal candidly with the Patent Office is a corollary of the equitable doctrine of unclean hands.

The Supreme Court has set forth the duty of candor owed by a patent applicant as follows:

> Those who have applications pending with the Patent Office or who are parties to Patent Office proceedings have an uncompromising duty to report to it all facts concerning possible fraud or inequitableness underlying the applications in issue. . . . Public interest demands that all facts relevant to such matters be submitted formally or informally to the Patent Office, which can then pass upon the sufficiency of the evidence. Only in this way can the agency act to safeguard the public in the first instance against fraudulent patent monopolies.
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> *Precision Instrument Manufacturing Co. v. Automotive Maintenance Machinery Co.*, 324 U.S. 806, 818 (1945)

The equitable origins of this doctrine, combined with recognition of the growing administrative burden facing the Patent Office, have led to expansion of the defense in recent years to encompass also a wide variety of inequitable conduct short of common law fraud or deceit. (538 F. 2d 180, 185)

. . . .

[T]he standard [of conduct] is not one of strict liability for innocent or even negligent omissions or misstatements before the Patent Office. Rather, to result in refusal to enforce a patent, the misconduct must be accompanied by "some element of wrongfulness, willfulness, or bad faith" (a "willful act . . . which rightfully can be said to transgress equitable standards of conduct"). This requirement of proof has been uniformly applied in infringement actions by a majority of the circuits to claims of both fraud and lesser inequitable conduct. Moreover, proof of misconduct under either theory must be established by "clear,

unequivocal and convincing" evidence. (538 F.2d 186, 187) (R.A. 93).

As noted earlier (p. 9) the District Court catalogued and analyzed recent decisions in *all* of the circuits as well as the Court of Customs and Patent Appeals (now the CAFC) involving the "duty of candor" enunciated by this Court in *Precision Instrument Manufacturing Co.* All are in accord. The circuit courts, including the Ninth Circuit and the Court of Appeals for the Federal Circuit require proof by clear, unequivocal and convincing evidence of each of the prerequisites of fraud, including wrongfulness, willfulness, or bad faith *and* materiality. Indeed, the District Court specifically considered the cases upon which IR relied below (including *Monsanto Co. v. Rohm & Haas Co.*, 312 F.Supp. 778 (E.D. Pa. 1970), *aff'd*, 456 F.2d 592 (3rd Cir.), *cert. denied*, 407 U.S. 934 (1972)) and on which it now relies in this Court, and found that those cases do not support the proposition for which IR cites them:

> In Monsanto, supra, the Court found that knowingly false statements were made to the Patent Office and material facts deliberately concealed that would otherwise have resulted in denial of the patent. (R.A. 97 n. 38).

The District Judge, after exhaustive examination of all the evidence, held that nothing material or even *pertinent* to patentability was withheld and the examiner testified that such information "would not have made any difference." (R.A. 99, 81). [Emphasis supplied.] Consequently, the Ninth Circuit found the District Court's opinion to be consistent with the standards announced in its earlier decisions. (A-3).

III.
CONCLUSION.

The Court of Appeals had the benefit of the thorough and detailed factual findings made by the District Court with respect to highly complex technical subject matter after an

extremely lengthy trial. After carefully analyzing the law established by this Court and applied by all the circuits including the CAFC, the District Court carefully applied the law to the facts and held that IR had failed to carry its heavy burden of establishing any of the essential elements of fraud or inequitable conduct, including materiality. Based on the detailed findings of fact by the Trial Court and its correct application of the legal standards, the Court of Appeals affirmed.

The decision was correct and fair. It turns on the particular facts and will affect no one other than the litigants. There is no conflict between the circuits with respect to any principle of law relied upon by the Ninth Circuit, and there is nothing in that opinion which merits review by this Court. IR failed to prove the essential elements of its claim and it would be inappropriate for this Court to write an advisory opinion on one issue, since the decision is clearly sustainable on other grounds not raised by the Petition.

For all of these reasons, it is respectfully submitted that the Petition should be denied.

Dated: January 3, 1983.

Respectfully submitted,

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APPENDIX.

Decision of the United States District Court for the Central District of California. (Filed June 12, 1980). No. 73-58. Pence

United States District Court for the Central District of California.

PFIZER,[1] INC.,

Plaintiff,

vs.

INTERNATIONAL RECTIFIER CORPORATION, RACHELLE LABORATORIES ITALIA, S.p.A., RACHELLE LABORATORIES, INC., and RACHELLE PHARMACEUTICALS INTERNATIONAL, S.A.,

Defendants.

("Corrected"*) Decision.

Background

On May 5, 1961 Application Ser. No. 106,146 was filed in the United States Patent Office as a continuation in part (c.i.p.) of a prior co-pending Application Ser. No. 31,236 as filed May 23, 1960. The application listed Robert E. Blackwood, Hans H. Rennhard, John J. Beereboom, and Charles R. Stephens, Jr., inventors, as assignors to Charles R. Pfizer & Co., Inc. of New York, N.Y., a Delaware corporation.[1] The application was for a patent on 6-deoxytetracycline derivatives and process. It was not until over five years later, on August 10, 1965, that Patent #3,200,149 was issued on certain chemical processes and products, one of which was the chemical compound that came to be known as alpha-6-deoxy-5-oxytetracycline. The generic name for

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[1]The corporate name was subsequently changed to Pfizer, Inc.

*After this court's decision was filed, a number of typographical, et al. errors were noted by counsel. This "court-corrected decision" does but eliminate those errors. The changes are not essential.

that compound is doxycycline, marketed by Pfizer under the trademarked name of Vibramycin.

Doxycycline, a synthetically produced chemical of the tetracycline family, proved to be a broad spectrum antibiotic exhibiting a high order of antibacterial action against a wide range of disease-causing microorganisms. It had essentially the same antibacterial properties of the fermentation-produced tetracyclines but had antibacterial action (microbiological activity against gram-positive and gram-negative microorganisms) superior to that of any other then known 6-deoxytetracyclines. As appeared in the file wrapper of the patent, it took a smaller amount of doxycycline to secure the antibacterial action expected from any of the then known tetracyclines. Because it took a smaller dosage to produce like antibiotic effects, a patient taking doxycycline did not have to take as many or as large dosages of a tetracycline drug as had been necessary before. Although it was *not* set forth in the patent application as one of the properties of the drug, doxycycline was found to have a lipophilicity much greater than any tetracycline and could be used much more freely by persons with renal diseases. Doxycycline became one of the most commercially successful of the tetracycline group of antibiotic drugs.

International Rectifier Corporation (IR), with head office in California,[2] began making doxycycline in Italy using the process described in Pfizer's patent, and started selling and distributing it in the United States and elsewhere in 1973, at a price very much lower than that charged by Pfizer. Pfizer then brought the patent infringement suit now before

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[2]International Rectifier Corporation had 4 subsidiaries: Rachelle Laboratories Italia S.p.A. of Italy; Rachelle Laboratories, Inc., with its principal place of business in Los Angeles County, California; Rachelle Pharmaceuticals International, S.A. of Brussels, Belgium; and Rachelle Laboratories (Philippines), Inc. Rachelle Italia is no longer in existence.

the court, seeking damages and declaratory and injunctive relief, in the Central District of California, against IR, as well as U. S. V. Pharmaceutical Corporation, which had distributed IR's doxycycline[3] in the United States.

As is standard procedure in almost every patent infringement action, IR and USV answered that Pfizer's patent was invalid and unenforceable for failure to meet statutory requirements of patentability and for fraud and misconduct before the Patent Office. Both defendants at first admitted infringement but thereafter moved to amend their answers, asserting unfair competition and antitrust counterclaims, as well as denying infringement. (This court subsequently refused to allow them to amend to deny infringement.) Upon defendants' motion, and because the so-called "Antibiotics Antitrust Litigation"[4] was already pending there, the Judicial Panel on Multidistrict Litigation, in March 1973 transferred the case to District Judge Miles W. Lord in the District of Minnesota.

During pretrial action before Judge Lord, defendants moved for partial summary judgment, claiming that Pfizer's conduct during the processing of the patent constituted fraud, inequitable conduct, and unclean hands, and, in addition, charged that Pfizer's conduct before Judge Lord between 1973 and 1975 was also fraudulent and inequitable and separately justified invalidation of the patent.

On July 16, 1975, Judge Lord granted partial summary judgment against Pfizer on both grounds and declared that its doxycycline patent was invalid and unenforceable.[5]

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[3]IR's trade name was Doxychel.

[4]This litigation was concerned with the fermentation-produced tetracyclines

[5]Pfizer, Inc. v. International Rectifier, 186 USPQ 511, D.Minn. 1975.

Pfizer appealed, and on June 16, 1976, the Appellate Court reversed Judge Lord, 538 F.2d 180, 190 USPQ 273 (8th Cir. 1976), holding that the evidence presented as to alleged misconduct of Pfizer before the Patent Office showed the existence of such material issues of fact as to preclude summary judgment. The Appellate Court further held that Judge Lord's findings that Pfizer had practiced fraud and other inequitable conduct upon the court were clearly erroneous. The case was then remanded for completion of pretrial proceedings to be followed by a plenary trial.

This judge was requested by both plaintiff and defendants to try the case, jury-waived, and, with the consent of Judge Lord and the U.S. District Court for the Central District of California, he took over the case. Upon motion, the Judicial Panel transferred it back to the Central District of California. Then followed further extensive pretrial proceedings, during which USV reached an agreement with Pfizer and withdrew from the case.[6] Trial on all issues relating to enforceability which involved claims of fraud or inequitable conduct in the Patent Office was started on October 15, 1978 before this judge, sitting in the Central District of California, and continued almost uninterruptedly until March 8, 1979. The trial produced over 6,000 pages of transcript, over 2,000 exhibits, and almost a "ten-foot shelf" of depositions. Post-trial Briefs and Answering Post-trial Briefs were also filed by both plaintiff and defendants.[7] The mass of evidence

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[6]IR immediately amended its answer to charge USV and Pfizer as having engaged in an unlawful conspiracy, etc. USV and IR, however, subsequently settled that claim.

[7]Counsel on each side proved to be highly competent attorneys, exceptionally well versed in chemical patent litigation, and the interests of their respective clients were well protected on the record. All issues were unstintingly and bitterly contested.

produced at trial more than proved the soundness of the conclusion of the 8th Circuit that there were such material disputed issues of facts as to preclude summary judgment. Disputed issues of intent, good faith, credibility, and other subjective feelings, all of which are entwined in any claim of fraud or inequitable conduct before the Patent Office, demanded full examination through a plenary trial.

Although this case was tried in the 9th Circuit, nevertheless this court feels that the statements of the Court of Appeals for the 8th Circuit regarding the law of the case approach the level of stare decises, if not res adjudicata. As pointed out by the 8th Circuit:

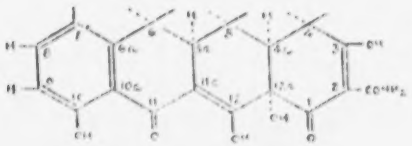
> The principle that a defendant in a patent infringement action may interpose as a complete defense the patentee's failure to deal candidly with the Patent Office is a corollary of the equitable doctrine of unclean hands. The Supreme Court has set forth the duty of candor owed by a patent applicant as follows:
>
> > Those who have applications pending with the Patent Office or who are parties to Patent Office proceedings have an uncompromising duty to report to it all facts concerning possible fraud or inequitableness underluying the applications in issue. * * * Public interest demands that all facts relevant to such matters be submitted formally or informally to the Patent Office, which can then pass upon the sufficiency of the evidence. Only in this way can the agency act to safeguard the public in the first instance against fraudulent patent monopolies.
> >
> > Precision Instrument Manufacturing Co. v. Automotive Maintenance Machinery Co., 324 U.S. 806, 818, 65 USPQ 133, 139-140 (1945).
>
> The equitable origins of this doctrine, combined with recognition of the growing administrative burden facing the Patent Office, have led to expansion of the

defense in recent years to encompass also a wide variety of inequitable conduct short of common law fraud or deceit. 190 USPQ 273, 277-278 (538 F.2d 180, 185) * * * [T]he standard [of conduct] is not one of strict liability for innocent or even negligent omissions or misstatements before the Patent Office. Rather, to result in refusal to enforce a patent, the misconduct must be accompanied by "some element of wrongfulness, willfulness, or bad faith" (a "willful act * * * which rightfully can be said to transgress equitable standards of conduct"). This requirement of proof has been uniformly applied in infringement actions by a majority of the circuits to claims of both fraud and lesser inequitable conduct. Moreover, proof of misconduct under either theory must be established by "clear, unequivocal and convincing" evidence. (185, 187, supra)

Undisputed Facts

Before turning to the disputed issues to be analyzed with this background, the court finds the following facts to be undisputed.

1. Doxycycline is one of a group of tetracycline compounds which have the following general structure in common:



2. The 4-, 5-, and 6-carbon atoms are asymmetric, each bonded to two substituents, one above and the other below the plane.[8]

When the doxycycline application was filed on May 5, 1961, the *absolute* stereochemistry of the tetracyclines was unknown. It was not until Dobrynin, et al., of the USSR Academy of Science in Moscow, apparently first published their paper on "The Absolute Configuration of the Tetracyclines" in Russia on March 21, 1962, then published in Great Britain after July 2, 1962, that the chemical world was apprised of the *absolute* stereochemistry of the tetracyclines. It must thus be noted that those "skilled in the art" did *not* have knowledge of the *absolute* chemistry of the tetracyclines until, at the earliest, almost a year after Pfizer filed its application for the doxycycline patent. Before Dobrynin, even the most "skilled in the art" could only know and deal with the *relative* stereochemistry of the tetracyclines.

Before the discovery of doxycyclines, one of the known tetracyclines was the fermentation-produced drug called oxytetracycline sold by Pfizer under the trade name Terramycin. It is also known as 5-oxytetracycline. Following

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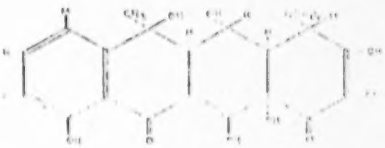
[8]Absolute stereochemistry defines which substituents are above and which are below the plane of the molecule. In a structural diagram of stereochemical configuration, dotted lines are used to indicate substituents below the plane, and solid lines to indicate substituents above it. Relative stereochemistry is limited to defining the orientation of substituents in a compound with respect to each other, i.e., it specifies which substituents are on the same side of the plane of the molecule ("cis" to each other) and which are on the opposite sides ("trans" to each other) without specifying which substituents are up and which are down. In a diagram undertaking to depict relative stereochemical configuration, the dotted lines at asymmetric carbons merely denote substituents that are all on one side of the plane and solid lines merely denote substituents that are on the opposite side.

the Dobrynin publication, it was established that the absolute stereochemical configuration of oxytetracycline is as illustrated:



In this diagram, CH_3 represents a methyl group, and-$N(CH^3)_2$ represents a dimethylamino group.

Before the discovery of doxycycline, American Cyanamid (Cyanamid), operating its drug division under the name of Lederle Laboratories (Lederle) had developed and patented what came to be known in this litigation as the McCormick compound. The McCormick compound was produced by the hydrogenolysis of oxytetracycline whereby the 6-hydroxyl group was removed as 6-deoxy-5-oxytetracycline, also known as 6-deoxy-oxytetracycline (and much later as beta-6-deoxy-oxytetracycline), was produced.

The research departments of all manufacturing drug companies are constantly in search of new drugs and employ every available means to produce them. The tetracyclines had proved to be so beneficial in treating certain types of animal and human ailments that Cyanamid and Pfizer had become the leaders in research involving the tetracyclines. The nature of the patent process, with its monoplistic rewards, was (and is) such that there was always a race to the Patent Office upon the discovery of any new chemical compound that intracompany tests showed had marked antimicrobial activity. It was also the normal practice for the patent attorneys for each company to urge interferences in patent applications of the other,[9] with the hope of forestalling the issuance of a patent on a drug claimed as having been discovered by research chemists of the other company.

Patent rules and regulations are so set up that a patent application, once filed, may be amended time after time and so long as there is a "c.i.p." the original filing date

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[9]Under Patent Office rules, an interference is a proceeding conducted by a patent examiner for the purpose of determining priority between two or more applicants claiming the same invention.

is preserved as the date of inventive process. Since these applications are not made public until the patent is issued, it is common patent practice on the part of the patent lawyers and the accepted procedure by the Patent Office to amend an application so as to include in it what may actually have been a later-developed product in order to get it the advantage afforded by the early date of the patent application. This is done in order to forestall the effectiveness of any interference claims which might be made.

Defendant's Position

Where, as in this case, infringement is charged and the defendant then contends that the patent is invalid, in its legal effect the burden of proof shifts and, as the 8th Circuit said, the burden falls upon the defendant to prove the patentee's alleged misconduct by clear, unequivocal, and convincing evidence. 190 USPQ 273, 277-278 (538 F.2d 180, 185, supra.)

IR challenges the validity of Pfizer's patent on these grounds:

I. The doxycycline patent is obvious from methacycline.

II. Pfizer fraudulently claimed that ruthenium could be used as a catalyst in preparing doxycycline.

III. Pfizer fraudulently claimed that the process set forth in Example 35 would make 7-chloro-doxycycline.

IV. Pfizer fraudulently concealed prior art references, inherent coproduction of doxycycline, and fraudulently misrepresented the results of its coproduction experiments.

V. Pfizer fraudulently concealed the significance of the Belgian Patent diagram as the most pertinent prior art.

VI. The use by Pfizer of the term "epi" in its application was to represent falsely that doxycycline had unexpectedly superior antibacterial activity over the prior tetracyclines.

VII. Pfizer fraudulently misrepresented the antibacterial activity of doxycycline.

VIII. Pfizer intentionally named false inventors of doxycycline.[10]

Findings of Fact and Conclusions of Law[11]

1. Obviousness

As indicated above, the two drug firms that were most active in experimental research with the terramycins and tetracyclines were Lederle and Pfizer. McCormick of Lederle had first discovered, and Lederle patented, what will be referred to hereafter as the "McCormick Patent" or the "Belgian Patent", whereby hydrogenation of fermentation-produced oxy-tetracycline (OTC) produced what became

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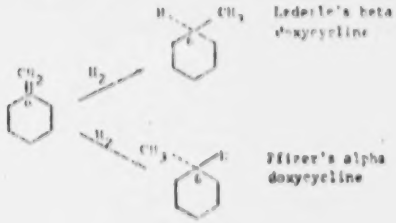
[10]In an attempt to minimize confusion, this court has followed IR's Opening Post Trial Brief in selecting the order in which IR's claims are discussed. Therefore, some over-lapping of findings and conclusions has necessarily resulted.

[11]All factual statements made hereunder concerning persons, acts, and events are to be considered as this court's findings of fact. That from time to time this court makes what might appear to be special findings of fact is not to be construed as any limitation on, or erosion of, any of this court's other factual statements, i.e., findings. Any words indicating particularized or special findings have been used solely to emphasize the depth of consideration that this court has given to certain materially relevant and highly disputed areas of Pfizer's conduct in arriving at its factual findings pertinent thereto.

known as beta-6-deoxy-oxytetracycline after Pfizer produced its doxycycline.

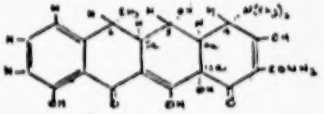
In the course of Pfizer's research, Pfizer scientists discovered and then patented methacycline (6-deoxy 6-methylyne-5-oxytetracycline). That patent also covers 11a-halo-6-methacycline. Methacycline and the other 6 methylene compounds all have a CH_2 carbon-to-carbon double bond at the 6th position. Methacycline differs from OTC in that at the 6th position the hydroxyl (OH) is removed and the emthyl (CH_3) is changed to a carbon-to-carbon double bond. Example:

Upon discovering methacycline,[12] Pfizer's chemists then conceived the hydrogenation process of adding a hydrogen to the double bond (CH_2) making a methyl (CH_3) and adding another hydrogen (H) opposite the methyl (CH_3). When this is done, the following results:



[12]In its earlier tetracycline series of experiments Pfizer had found and secured patents covering the 11a-halo-6-methylene and the 6-methylene compounds. Discovery of methacycline resulted from the progression of experiments in this series.

Pfizer's process produced not only what it named at first the "epi", then later, the "alpha" 6-deoxy-oxytetracycline,



The complete doxycycline molecule.

i.e., the doxycycline in issue, but also McCormick's (beta) 6-deoxy-oxytetracycline.[13]

Both Drs. Stephens and Conover of Pfizer's research staff had been attempting to find the 6th epimer to Lederle's 6-deoxy-5-oxytetracycline in 1958-59. When the Pfizer chemists found methacycline, they then conceived the idea that hydrogenation of methacycline would possibly dissolve the double bond and that possibly both Lederle's 6-deoxy-5-oxytetracycline and the other epimer at the 6th position would be produced.

Dr. Stephens, in his May-June 1960 bimonthly report (1)[14] issued contemporaneously with the discovery of the 6 methylene compounds, stated, "The methylene tetracyclines offer unique theoretical possibilities for derivative formation due to the presence of the styrene-like double bond", and that when methacycline was discovered, "we wanted to do a lot more work to make things from that."

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[13]As will be more fully discussed under subsection VI hereafter, by its process of hydrogenation of fermentation-produced oxytetracycline, Lederle's McCormick had discovered and patented what Lederle believed to be the alpha-6-deoxy-oxytetracycline but which, after Pfizer discovered doxycycline, became, correctly, to be called the beta 6-deoxy-oxytetracycline.

[14]Numbers will be used for notes indicating specific references to the record as supporting the finding. Such notes are listed in Appendix A of this decision.

It gave Stephens and his group another chance to find the C-6th epimer to the McCormick compound. (2)

It is IR's position that the hydrogenation of a carbon-to-carbon double bond "was the most well known of all of the chemical reactions of the double bond and was expected to add hydrogen to the double bond to form methyl (CH_3) and hydrogen (H) groups in both the 6-deoxy epimeric forms, i.e., alpha and beta." IR cites Royal's Classical 1954 Organic Chemistry Text statement that "* * * Catalytic addition of hydrogen is the most general reaction of the carbon to carbon double bond * * * at least 99% of all known compounds containing the alkene linkage will add hydrogen over a hydrogenation catalyst * * *."

As stated previously, and as will be stated hereafter, at the time that methacycline was discovered and Pfizer's doxycycline was discovered, the *absolute* chemistry of neither methacyclines nor the tetracyclines was known. Lederle chemists believed that they had accurately determined the relative stereochemistry of the oxytetracyclines, but they were later proved wrong. Pfizer chemists were a little more advanced in their knowledge of the stereochemistry, but even they were not sure. Blackwood and Stephens in 1960 thought that methacycline was a 5a, 6-anhydrotetracycline, whereas it was not, but rather was a 6-methylene tetracycline. (3)

Dr. Woodward testified that it was impossible to predict that the hydrogenation of methacycline would yield doxycycline nor could it be assumed that hydrogenation conditions would be found to produce it. (4) Methacycline contains a plurality of double bonds at any of which hydrogen might react and it could *not* have been assumed by either Pfizer or Lederic chemists, certainly those then most "skilled in the art", that hydrogenation of methacycline would, with certainty, take place only at the 6 methylene

group to form a 6-deoxy compound, or that hydrogenation would not effect changes elsewhere in the molecule. (5) Dr. von Schach testified that it would not have been possible to predict that the hydrogenation of methacycline would form either the alpha or beta or both deoxy epimers; (6) that tetracyclines, including methacycline, are complex compounds with many reactor centers. They do not behave like alkenes, which have only one reactive center. (7)

After the methacycline patent was issued (May 16, 1961), a Pfizer publication describing methacycline and its preparation appeared in the Journal of the American Chemical Society (J. A. C. S.) in June 1961. Pfizer did not publish its discovery of doxycycline until July 5, 1962. As indicated above, during the '50's and '60's Lederle's chemists were also researching for new tetracyclines. (8) Lederle's patents during that period show that it was active in the preparation of oxytetracycline derivatives (9) but there was no evidence before this court that anyone other than Pfizer conceived and produced doxycycline during that one-year period following the issuance of the methacycline patent.

Shortly after Pfizer had its patent on methacycline, Lederle secured some methacycline "to determine some of the physical, chemical, and biological characteristics of this new antibiotic" (10) for test purposes, including catalytic hydrogenation. As IR would have Royal's statement interpreted, it should have then been obvious to Lederle's Dr. McCormick that he should attempt to and would obtain doxycycline from the hydrogenation of a sample of Pfizer's methacycline. In fact, as pointed out in Pfizer's Post Trial Brief (pp. 205-6), Lederle's contemporaneous report of its own hydrogenation (USV Dep. Ex. 269, p. 2) is utterly silent on doxycycline, merely stating that Lederle detected only the McCormick compound (beta doxycycline) in the hydrogenation product. This alone shows that despite

Royal's textbook statement, it was far from obvious to those *most* skilled in the art that the alpha epimer would be found by the hydrogenation of methacycline.

That Pfizer's chemists were aware of a possible method of attacking the problem of finding the 6th epimer, from their own knowledge of methacycline's molecular structure, does nothing more than teach that it was *to them obvious* to try. Such possibilities are insufficient to reach the level of obvious predictability of success necessary to sustain a rejection under §103. (11)

That Blackwood and Stephens felt that there was a "one in three chance that hydrogenation of methacycline would produce doxycycline," or that Murai stated that when he attempted to separate the products of a ruthenium catalyzed hydrogenation of methacycline he expected that both the alpha and beta 6-deoxy epimers would be produced, or that Beereboom, in attempting to demonstrate the success of the 7-chloro doxycycline experiment stated that he anticipated that both deoxy compounds would be likely to be formed, (12) or that Oglesby, in switching the product claims from the PC 3597 series of Pfizer's patent applications to the PC 4429 series (PC 4429-D is methacycline) on the ground that doxycycline "inhered" in the hydrogenation of methacycline (13) does not validate IR's contention that the production of doxcycline was obvious to those skilled in the art after methacycline was discovered. (14) Methacycline did not become prior art as urged by IR simply because its molecular structure contained a carbon double bond at the 6th position.

As was held by the 9th Circuit in Reeves Instrument Corp. v. Beckman Instrument Inc., 444 F.2d 263, 170 USPQ 74, cert. denied 404 U.S. 951, 171 USPQ 641 (1971), determination of ordinary skill in the art "can be made only by an analysis of the problem allegedly solved by the invention

and the efforts of others to arrive at a satisfactory solution." An applicant's own earlier work is not prior art as to him. (15) Even though Pfizer's chemists, after discovering methacycline, perceived possible potentials in the new product, it took more than six months after Pfizer had produced it and knew its structure for them to discover doxycycline. (16)

IR's contention that once methacycline had been made it could have obviously and immediately been predicted by those skilled in the art that methacycline would hydrogenate solely at the 6th position and that both 6-deoxy epimers would be produced is without merit.

Predictability of Product Characteristics

IR's second basis for maintaining that doxycycline was obvious from methacycline is founded upon its contention that those skilled in the art expect that both the alpha and beta compounds produced at the 6th position (a) would be more stable than the fermentation-product; (b) that the alpha epimer would have greater antibacterial activity than the beta epimer; and (c) that in fact that antibacterial activity of doxycycline differs only in degree and not in kind from the activity of the previously known tetracyclines.

At the time doxycycline was produced by Pfizer's chemists, Lederle's McCormick compound was believed by Lederle's chemists to have a "natural" configuration, i.e., the same molecular configuration as found in the fermentation-produced product. As will be discussed more fully hereafter, McCormick's Belgian Patent, on what ultimately proved to be the beta-6-deoxy-tetracycline produced by hydrogenolysis of the patent fermentation-produced tetracyclines, illustrated that compound as having the same stereochemical configuration *as the parent tetracyclines* in all positions, including the 6th position, i.e., "natural". (*Later*

developments show that this conclusion was erroneous, but nevertheless that was the state of the prior art at the time of Pfizer's discovery.)

Both McCormick's beta compound and Pfizer's alpha doxycycline actually chemically differ only in the stereochemical orientation of the 6 methyl group. IR states that Pfizer's and Lederle's published literature, beginning as early as 1958, reported that "removal of the 6 hydroxyl group (6-OH) resulted in 6-deoxy compounds which also retained activity and had increased stability * * * in acids and alkali", and "that neither the C-6 methyl nor the C-6 hydroxyl was necessary for antibacterial activity, and that the absence of both groups improved the stability of the compound." (17)

It would logically follow, from IR's contention that no antibacterial benefit could result from the discovery of the true alpha 6 epimer, that Pfizer's chemists would be dissuaded from attempting to perform the studies and experiments that led them to find doxycycline. The McCormick compound possesses a 6 methyl group, and if a 6 methyl group is not necessary for antibacterial activity, it would follow that there should be no incentive to alter the orientation of that group because there should be no expectation of improved antibacterial activity. As stated in In re Stemniski, 444 F.2d 581, 170 USPQ 343 (C.C.P.A. 1971):

> For example, what on this record — other than abstract, theoretical or academic considerations — would lead one of ordinary skill to change the structure of the reference compounds to obtain the claimed compounds? * * * How can there be obviousness of structure, or particularly of the subject matter as a whole, when no apparent purpose or result is to be achieved, no reason or motivation to be satisfied, upon modifying the reference compound's structure?

To the same effect, the court, in In re Bergel, 292 F.2d 955, 956-57, 130 USPQ 206, 208 (C.C.P.A. 1961), stated:

> The mere fact that it is *possible* to find two isolated disclosures which might be combined in such a way to produce a new compound does not necessarily render such production obvious unless the art also contains something to suggest the desirability of the proposed combination. [Emphasis in original.]

The knowledge that 6-deoxy-tetracyclines display good stability in acids and alkali is irrelevant because it was never advanced by Pfizer as one of the bases for patentability of its product.

IR's claim that doxycycline was found to have a "natural" configuration and therefore its superior activity was to be expected likewise is without merit. At the time that Pfizer's chemists discovered and produced doxycycline, Lederle's chemists (among those most skilled in the art) were convinced that Dr. McCormick had achieved production of the natural configuration in the product covered by Lederle's Belgian Patent. On page 3 of Lederle's (Dr. McCormick's) Belgian Patent (18) are found two stereochemical diagrams, one of the parent tetracyclines, the other, the 6-deoxy products of their hydrogenolysis. Those two diagrams show identical relative stereochemistry to each other at all positions. Thus, the 6th position in the McCormick compound is shown to be the "natural configuration." That was the "state of the art" when Pfizer found doxycycline.

Dr. McCormick testified that it was his assumption that "the C-6 methyl group in the 6-deoxyterramycin had the same stereo configuration as the C-6 methyl group in terramycin." (19) This erroneous conclusion of Lederle's chemists was not changed until after the Muxfeldt publi-

cation appeared in 1962, long after Pfizer's doxycycline application had been filed. (20)

IR's claim that doxycycline is unpatentable because it differs in degree but not in kind is likewise without merit. As was stated by the C.C.P.A. in In re Wagner, 371 F.2d 877, 152 USPQ 552 (1967):

> We find nothing in section 103 which warrants the board's attempted dismissal of the differences between appellants' claimed compound and the prior art as not being "differences in kind," whatever this may mean. This phrase as here encountered is used by the board to infer that, unless a "difference in kind" is found, the invention is obvious under section 103. Whether the difference between the claimed invention and the prior art is a difference "in kind" or a difference "in degree" is not mentioned in section 103. Section 103 simply requires a determination as to whether the invention as a whole would have been *obvious* to one of ordinary skill in the art at the time of appellants' invention. An unexpected increase in physiological activity may be persuasive evidence of unobviousness, In re Grier, 342 F.2d 120, 52 CCPA 1081, 144 USPQ 654. In all cases it is to be considered along with other evidence of unobviousness.

As that court also stated in In re Lundsford, 357 F.2d 380, 384, 148 USPQ 716, 719-720 (1966):

> [W]e find no authority in section 103 for treating "improvement" inventions, or inventions differing from the prior art only "in matter of degree," any differently from other types of inventions * * *. [W]e are inclined to agree with appellant that inventions of the type here involved are frequently made only after the expenditure of vast amounts of research time and effort; in short, they represent the very kind of invention some industries, most notably the drug industry, seek in order to

> obtain, or maintain, the kind of competitive advantage which promotes progress in the "useful arts."
>
> * * *
>
> Furthermore, like the Patent Office, we have frequently found novel chemical *processes* producing the *same* product, but in unexpectedly higher yields, to be patentable by reason of that yield, a "matter of degree." Should not chemical products, also displaying an unexpectedly higher decree of effectiveness, be treated in like manner?

At the time of Pfizer's application, it showed to the satisfaction of the Patent Examiners that it had a degree of antimicrobial activity superior to that of the McCormick compound, at that time the closest prior art of the patented tetracyclines.

Dr. English's affidavit before the Patent Office demonstrated the superiority of doxycycline over the McCormick compound in vitro in 18 of the 23 organisms tested. While MIC values, like other biological measurements, are subject to some variation, they are valuable for comparative purposes. By comparing the activity of two compounds against 23 organisms (as was done by Pfizer), one skilled in the art is given an indication of the *relative* activity of the 2 compounds. The multitide of comparisons also adds reliability to the claimed effectiveness of the drug. Dr. McBride's affidavit showed an oral PD_{50} for the McCormick compound of 22 mg/kg and an oral PD_{50} for doxycycline of 0.60 mg/kg. (22) Those results demonstrated to the Patent Office and to this court that doxycycline was a much more active antibiotic than the previously patented McCormick compound.

In 1964 Dr. English for Pfizer conducted tests involving staph 5 MP (mouse passed and multiple dosing).[15] The pur-

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[15]Staph 5 MP indicates a mouse was infected with staph 5, killed, and its organisms, then designated as staph-5-MP were used as the infecting organisms for the subsequent in vivo test.

pose of mouse-passing is to render the culture more virulent and it generally requires a greater dosage of antibiotic to attack infection caused by mouse-passed culture. For this reason, PD_{50} data based on MP cultures would generally show different data from that derived from non-MP cultures. (23) The English 1964 oral PD_{50} for doxycycline against staph 5 MP, though reported at the time as 2.55 mg/kg, should have been 1.43 mg/kg. Both the 1962 PD_{50} 0.60 and the 1964 PD_{50} of 1.43 mg/kg based upon mouse-passed culture, show the unusually high oral potency of doxycycline when compared to the McCormick compound with an oral PD_{50} of 22 mg/kg.

This court finds that IR's argument of obviousness on the basis of its expected antibacterial activity and stability is without merit.

II. Ruthenium as a Catalyst

IR next maintains that Pfizer fraudulently claimed the use of ruthenium as a catalyst for preparing doxycycline. Pfizer's application stated on page 3: (24)

> The noble metal catalysts as employed in the present invention include platinum, palladium, rhenium, rhodium and ruthenium, as well as the known catalytic compounds thereof such as the oxides, chlorides, etc. * * * Examples of preferred catalysts are 5% palladium-on-carbon, 5% platinum-on-carbon, 5% rhodium-on-carbon, platinum chloride, palladium chloride, platinum oxide and ruthenium oxide * * *.

Thereafter on page 4 appears:

> Rhodium is the preferred catalyst for the process of the present invention since it produces the highest overall yield of 6-epi-6-deoxy [alpha-6-deoxy] and 6-deoxytetracyclines [beta-6-deoxytetracyclines] * * * however, the other noble metal catalysts are entirely

operative to obtain both 6-epi-6-deoxy and 6-deoxy-tetracyclines.

On page 10 appears:

> In summary of the process of the present invention, it will be appreciated that it not only provides a convenient means for producing new and useful 6-epi-6-deoxytetracylines but in addition, also produces known 6-deoxytetracyclines. Whereas the later compounds may be produced by hydrogenation of a parent tetracycline antibiotic, i.e., one containing both a 6-methyl and a 6-hydroxy substituent, the procedure of the present invention is preferred since the yields thereof are substantially higher than those obtained by the known procedure.

IR maintains that:

> Blackwood, Stephens, Rennhard, Beereboom and von Schach * * * knew that they had been unsuccessful in using ruthenium as a catalyst for the methacycline hydrogenation process in six attempts over a more than seven months period prior to the filing of the doxycycline application and in seven additional attempts over a year-and-a-half period during the pendency of the application. (25)

The thrust of IR's argument is that Pfizer knew that ruthenium would not work as a catalyst but nevertheless included ruthenium in its application to prevent others from using it. Even this illogical approach, however, is not borne out by the evidence of the 13 early Pfizer experiments using ruthenium as a catalyst. Contemporaneous notebook entries of six experiments show that ruthenium catalyzed the reaction and five show that either beta or alpha 6-deoxy tetracycline was formed and on the papergrams of another ruthenium-catalyzed hydrogenation a spot was found in the doxycycline region. (26)

In his January 1961 monthly report, Dr. von Schach reported, "Although the results are not quite as clear cut as stated, we found that palladium and ruthenium catalyzed the hydrogenation of the double bond very slowly." (27) A detailed experiment-by-experiment analysis of the evidence on those referred to by IR as having failed (the contents of which are as set forth by Pfizer in its Post Trial Brief, pp. 129-133) does not permit the conclusion that ruthenium could not be used as a catalyst as claimed. This court concludes that Beereboom's monthly report of September 25, 1961, (28) stating that ruthenium will not work under the conditions used, was not intended to indicate that it could *not* work but that ruthenium did not produce commercially satisfactory yields. (29) This court reaches the same conclusion concerning Dr. Beereboom's and Dr. von Schach's joint report of December 18, 1961. (30) It, too, concerned itself with "the most practical synthetic routes to GS 3065" (doxycycline) and "concerned itself with the commercial preparation" of doxycycline. (31) The statement in that report that "catalysts such as ruthenium and Raney nickel * * * have failed to give the desired reaction" was intended to refer to the efficient production of larger quantities of doxycycline. This court accepts as true Dr. von Schach's statement that if that report were to be interpreted as stating that ruthenium had failed to catalyze the reaction and produce doxycycline, then such interpretation would be "clearly inaccurate". (32) This court finds that ruthenium could and would catalyze the reactions as claimed.

To confirm Pfizer's reference to the use of ruthenium was Dr. Murai's report that "a reasonable quantity of 6-(alpha)-desoxytetracycline (0.5g) has been isolated from crude hydrogenation product of GS2830 (309)." (33) Ruthenium was the catalyst used in that hydrogenation. The only ref-

erences in the patent showing yields of doxycycline are found in Examples 32 and 33 and both of those examples specifically recite the use of rhodium as the catalyst, which the patent explicitly stated was the preferred catalyst.

Nowhere in the file wrapper could this court find that Pfizer had made any representation regarding the yield of doxycycline if ruthenium was used as a catalyst. Examiner Adams was questioned in reference to the above-quoted sentence in the patent application beginning "Rhodium is the preferred catalyst", et cetera: "Q. From reading the application during the time you were with the Patent Office, did you understand that ruthenium would also produce high yields of doxycycline?". Adams replied, "No." (34) He further testified that he would have understood from the application "that you could produce 6-epi and 6-deoxy tetracycline with the ruthenium catalyst in at least recoverable amounts, useful amounts." (35).

In the cross examination of Examiner Adams by IR's counsel Cohen, in response to the question: "[A]ssuming that *all* of Pfizer's experiments using ruthenium as a catalyst had failed to produce *any* alpha-6-deoxytetracycline", Adams stated that he would have rejected the process claims which included ruthenium as a catalyst. Upon re-direct examination, he was asked:

> Q. Now, I would like you to assume this set of facts:
>
> I would like you to assume that applicant's assignee and the applicant had conducted various experiments hydrogenating materials specified in the process claims of the doxycycline application, using ruthenium as the catalyst, under various conditions.
>
> I would like you to assume further that, under some reaction conditions, there did not appear to be evidence

that the starting material was successfully hydrogenated.

Assume further that in other instances, within the scope of the process claims ruthenium did catalyze the reaction.

And assume that in some instances there was evidence that 6-epi-6-deoxytetracyclines were produced, including doxycycline.

Lastly assume that the applicant and applicant's assignee believed, based upon their knowledge and experience in the tetracycline art, that ruthenium would catalyze the hydrogenation, and that 6-epi-6-deoxytetracyclines, including doxycycline, would be produced thereby.

Now, if you had rejected claims 1, 4, 5 and 8 for inoperability and these facts were established in response to your rejection, would you have maintained the rejection?

* * *

A. No. On the facts that they have stated, they have shown that ruthenium can catalyze the reaction, and they continued to believe that it can. (36)

Adams further testified:

Q. Mr. Adams, what was your view during the time of the prosecution of the doxycycline patent application regarding whether an applicant had an obligation to call to the attention of the Patent Office experimental failures if the applicant had a reasonable basis to believe the invention, as claimed, was operable and could be practiced through use of ordinary knowledge and skill in the art?

A. My view was he had no obligation to call such failures to the attention of the Patent Office.

Q. And what was your view regarding whether an applicant, who had experienced experimental failures,

had to conduct successful experiments before he could claim the subject matter?

A. My view, then as now, is that there is no requirement to conduct any experiments, successful or otherwise, in order to obtain a patent application. That is it.

Mr. Cohen: May I hear that question and answer, please.

(A portion of the record was read back by the reporter.)

Q. What do you mean by "to obtain a patent application?"

A. Should be "to obtain a patent." (37)

Conclusion

IR has failed to sustain its burden of proving its claim that Pfizer fraudulently claimed the use of ruthenium as a catalyst for preparing doxycycline by "clear, unequivocal and convincing evidence".

III. The Example 35 Process

In connection with its claim of inoperability, IR maintained that Pfizer fraudulently claimed the Example 35 process for making 7-chloro doxycycline. Example 35 teaches the preparation of 7-chloro doxycycline (7-chloro-6-epi-6-deoxy-5-oxytetracycline) by hydrogenating 7-chloro methacycline (7-chloro-6-deoxy-6-demethyl-6-methylene-5-oxytetracycline). IR maintains that *all* of Pfizer's 25 experiments failed to make 7-chloro doxycycline by the Example 35 process or by analogous processes which should have also produced some 7-chloro doxycycline. IR points out that Beereboom's monthly reports of April and May 1961 state that "all attempts and efforts" to produce 7-chloro doxycycline by the Example 35 techniques were unsuccessful. (38) IR maintains that Pfizer had the duty to

disclose its failure and any excuses therefore to the Patent Office. IR also maintains that Pfizer *knew* that the 7-chloro group in the tetracycline molecule was highly susceptible to removal upon catalytic hydrogenation, but that Pfizer, with such knowledge, nevertheless retained Example 35 in the doxycycline application and issued claims embracing the Example 35 process for making 7-chloro doxycycline without disclosing those facts or its experimental failures to the Examiner. IR then maintains that Pfizer had no factual basis for a good faith belief that Example 35 worked. IR maintains that Pfizer's conduct in not presenting the facts of its failure to make 7-chloro doxycycline by Example 35 technique constitutes fraud upon and inequitable conduct before the Patent Office.

While IR lists 25 hydrogenations of 7-chloro methacycline which it claims failed to make 7-chloro-doxycycline, a detailed analysis of those experiments shows that most of them employed palladium catalyst which is not recommended for retention of the 7-chloro substituent. In all but one of the rhodium-catalyzed hydrogenations cited residual sulpher in the starting material poisoned the catalyst thus defeating the hydrogenation. (39) The purpose of Dr. von Schach's hydrogenations were specifically designed to produce methacycline by *removing* the 7-chloro substituent. (40) Dr. von Schach did not attempt to make 7-chloro doxycycline in any of those experiments. (41) In his November-December 1963 bimonthly report (one of three consecutive reports; IR 775-776-777), he reported several possibilities for the preparation of tritium labeled GS 2876 were explored (see p. 147, Pfizer's PTB). Dr. Beereboom testified that a review of his early notebooks and monthly reports satisfied him that his experiments had produced indication of the formation of 7-chloro doxycycline. (42) Three of those experiments involved the hydrogenation of

7-chloro methacycline (GS 2829) and the others involved hydrogenation of 7, 11a-dichloro methacycline (GS 2988) (both processes are disclosed in the doxcycline patent). (43) Although IR maintained that the hydrogenation of GS 2988 was "not an issue in this case" since the patent Example 35 starts with GS2989, Dr. Beereboom testified:

> [I]t was well established that the first thing that would happen in the hydrogenation of GS 2988 would be the generation of GS 2989. So from the practical standpoint while I was conducting these experiments and it is my belief today the hydrogenation of 2988 is equivalent to the hydrogenation of 2989. (44)

It is to be noted that Patent Example 6B stops the hydrogenation of GS 2988 at the point where the 11a-chloro group has been removed and isolates GS2989. Thus, as Dr. Blackwood testified, (45) the hydrogenation of GS 2988 to 7-chloro doxycycline proceeds via the hydrogenation of GS2989. As Dr. Beereboom testified, he fully expected 7-chloro doxycycline to be formed by the process set forth in Example 35.

This court is satisfied that Pfizer's chemists had produced 7-chloro doxycycline by that method.

IR has placed great emphasis on statements made by Examiner Adams in the course of his examination by IR's counsel during deposition discovery. (46) IR's questions to Adams asked that he assume that Pfizer's Claims I, II, and IV included hydrogenating 7-chloro methacycline to make 7-chloro doxycycline, and that all of Pfizer's experiments thereon failed. Based upon that assumption, Adams testified that if Pfizer did not demonstrate it had in fact succeeded in preparing 7-chloro doxycycline by the Example 35 technique or demonstrate a factual basis for a good faith belief that 7-chloro doxycycline could be thus prepared, he would have made that rejection final. As indicated heretofore,

Pfizer has satisfied this court that it had a factual basis for a "good faith" belief that 7-chloro doxycycline could be prepared by the Example 35 technique, and that it had in fact succeeded in so preparing it.

Even if this were not so, Examiner Adams thereafter testified that it is not necessary for an applicant to actually have produced a product or performed a process in order to claim it. He said,

> My understanding, at the time I was in the Office, at the time — at the present time, is that there is no requirement under U.S. Law for a patent applicant to have ever done anything in the laboratory to claim either a chemical process or a chemical product. 35 USC 112 requires only that the applicant describe his invention and teach how to make and use the same. If an applicant believes that, in "carrying out a chemical process — in good faith believes that, in carrying out a chemical process, a certain result will follow and claims that process and/or the results that follow, to my knowledge, that is all that is required in order for him to file an application."

He continued,

> If, in spite of failure to make 7-halo, Pfizer scientists were still of a good-faith belief that the 7-halo derivative could be made by processes that they have described, then I think that would have been a — certainly a proper basis for them to have claimed the subject matter, and it also would have been a response to a rejection made.
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> * * *
>
> * * * [T]he question I would have raised: [is] inoperability. And if the applicant comes back and says, "You are wrong. It works," then that is an adequate response. (47)

Underlying IR's charges of fraud or inequitable conduct in both the preceding ruthenium and this Example 35 issues is its claim that Pfizer had absolute duty to call the Examiner's attention to each and every failure. The 8th Circuit, in its opinion preceding this trial,[16] stated:

> In the instant case, the District Court adopted a far-reaching interpretation of the doctrine [that parties to a Patent Office proceeding have an *uncompromising duty* to report to it all facts concerning possible fraud or inequitableness underlying the application] emanating from what the court described as an obligation on Pfizer's part to disclose to the Patent Office any fact that "may be relevant to an issue of patentability." Further, the court held that the defendants in proving Pfizer's breach of this obligation were not required to prove that Pfizer intended to deceive the patent examiners, and that Pfizer's claims of good faith are immaterial and do not create genuine issues of fact. We believe this interpretation imposes an unworkable standard of conduct upon the patent applicant and expands the inequitable conduct defense beyond legitimate limits * * * to result in refusal to enforce a patent, the misconduct must be accompanied by "some element of wrongfulness, willfulness, or bad faith" * * *

This court finds nothing arising out of the fact that Pfizer did not advise the Patent Office of *all* of its experiments, good or bad, involving either ruthenium or Example 35 that manifested any element of wrongfulness, willfulness, or bad faith required for patent invalidation.

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[16]Pfizer, Inc. v. IR Corp., 538 F.2d 180, 185, 190 USPQ 273, 277-278 supra.

IR has failed to sustain its burden of proving its claim that Pfizer fraudulently claimed the Example 35 process for making 7-chloro doxycycline by "clear, unequivocal and convincing" evidence.

IV. Prior Art Inherent Coproduction

IR's fourth claim is that Pfizer fraudulently concealed the issue of the prior art inherent coproduction of doxycycline and fraudulently misrepresented the results of its coproduction experiments.

Pfizer's PC 3597 Application

Not alone during its discovery procedures, but also during the trial IR devoted a great deal of time and effort exploring into all facets of Pfizer's PC 3597 application series. In its Post Trial Brief IR devoted 15 pages in an attempt to show that less than a year after the filing of its PC 3597 application in December 1957, Pfizer became aware that during Dr. Stephens' continuing experiments in the hydrogenation of OTC he "believed" that he had coproduced what ultimately became known to be both beta and alpha doxycyclines. IR's Post Trial Brief sets forth certain actions of Oglesby before the Patent Office, as well as his intraoffice and Pfizer communications to attempt to show that Pfizer concealed such coproduction. IR also charges that Oglesby "salted" his October 2, 1959 memo (48) to cover up the whole issue of coproduction.

At the top of its 15th page, however, IR makes this statement: "* * * the P.C. 3597 series and the interference are not important because of any final result * * *" (49) Nevertheless, IR continues on in its brief to maintain that it *was* significant because (a) during that period of 1957-1959 Oglesby and Pfizer learned that "as a matter of future policy the Patent Office would apply a speculated prior art

inherent coproduction rejection and require proof to the contrary''; (50) (b) Pfizer relied on paper chromatography as evidence to both prove and disprove inherent coproduction; (c) Oglesby and Pfizer suppressed prior art relevant to the coproduction issue, suppressed evidence of the fact of the coproduction, and Pfizer (d) violated its duty to conduct all business before the Patent Office ''in writing'', and make a written record of the substance of the several alleged interviews. (51) From all of this, IR charges that Oglesby followed that same pattern of deliberately and willfully misleading the Patent Office in attempting to secure Pfizer's 4429F claims to alpha 6-deoxy-oxytetracycline.

As indicated heretofore, the chemists of Pfizer and Cyanamid were each seeking to develop new derivatives from tetracyclines. As soon as one isolated any compound, it would race to the Patent Office to file a patent application and then run to secure patents elsewhere in the world.

In the course of Pfizer's own research program, in 1952 and for some time thereafter, Pfizer's Drs. Conover and Stephens worked on tetracyclines. In 1957 Dr. Stephens initiated a program involving the hydrogenation of OTC and other fermentation tetracyclines and in the course of his experiments detected the presence of (beta) doxycycline by paper chromatography. As a result, Pfizer filed its PC 3597 application on December 2, 1957. In the PC 3597 application, Pfizer claimed beta doxycycline (6-deoxy-5-oxytetracycline), 6-deoxytetracycline, 7-chloro-6-deoxytetracycline and processes for making them by hydrogenating the fermentation-produced tetracyclines, e.g. OTC. Pfizer filed foreign counterparts of the PC 3597 appication in a number of countries, and Pfizer's Pakistan Patent #108,981 was granted on June 17, 1959. The Pakistan Patent thereby became prior art.

Certain of the product claims of the PC 3597 application were rejected by the Patent Examiner on the ground that Cyanamid's United States patent involving hydrogenation of tetracycline and Cyanamid's Australian (Boothe) Patent directed to hydrogenating CTC would respectively inherently coproduce Cyanamid's 6-deoxy-tetracycline and 7-chloro-6-deoxy-tetracycline. Stephens, however, subsequently determined that 7-chloro-6-deoxy-tetracycline was *not* produced by the PC 3597A application claiming only 6-deoxytetracycline.

Dr. Stephens and Coproduction — PC 3597A and C; Paper Chromatography

Because of IR's claim that Pfizer concealed Dr. Stephens' "coproduction" from the Patent Office during the prosecution of its PC 3597 series and thereafter continued such concealment in the prosecution of its PC 4429F application, it becomes necessary first to evaluate IR's claim as it applies to the PC 3597 series. Later its similar claim concerning Pfizer's PC 4429F application will be covered.

The coproduction issue in Pfizer's 3597A as well as its C applications followed from the observation by Pfizer's Dr. Stephens in his May 16, 1958 laboratory notebook: "Speculations on possibility of 6-deoxy-terramycin isomer * * * search for another isomer", i.e., alpha doxycycline. (52) He therein referred to an Rf 0.5 spot on the papergrams of his OTC reaction product and expressed the view that "this new spot could be a C-6 epimer." Based upon this initial speculation, Stephens attempted to isolate and identify the Rf 0.5 component. This attempt on his part became what was called the Stephens' 1958 Campaign.

During 1958 and 1959 Dr. Stephens detected but never absolutely identified an Rf 0.5 component in the reaction products of over 50 hydrogenations of OTC. From his first

report on hydrogenation of tetracycline of May 16, 1958, (53) in his monthly report of May 1958, (54) in his bimonthly report of September-October 1958, (55) in hs notebook report of October 16-28, 1958 (56), in his bimonthly report of October-November 1959, (57) it appears that Dr. Stephens was never certain that his experiments had actually produced "the long-sought 6 epimer."

As stated above, his May 16, 1958 laboratory notebook is headed: "Speculations on possibillity of 6-deoxy-terramycin isomers * * * search for another isomer." In that report, he indicates that his papergrams had shown biologically active spots indicating a possible isomer of "6-deoxy-terra" in the "Rf .5 zone" i.e., Rf .46 — Rf .5 in 6-deoxy crude. His report of that month states that his papergrams "of numerous 6-deoxy-terramycin preparations" revealed the "presence of a small amount of at least one additional new biologically active substance. It is conceivable that this is a C-6 epimer of deoxy terramycin." In his bimonthly report of September-October 1958 he reports. "concerning 6-deoxy compound developments * * * trace amounts of an additional antibiotic substance have been previously observed * * * in 6-deoxy terramycin reaction mixtures * * * this * * * is being investigated." A year later, in his bimonthly report of October-November 1959 he reports, "Active trace impurity (possibly the C-6 epimer) in 6-deoxy-terramycin has been isolated as an almost pure concentrate * * *"

Nevertheless, when Pfizer filed its PC 3597A application, it modified Example I of its PC 3597 application (directed at the hydrogenation of OTC), additionally referring therein to the detection of "a trace of an additional active entity * * * having Rf 0.5 * * * this product may be the C-6 epimer of 6-deoxy-5-oxytetracycline * * *" This reference was based on Dr. Stephens' experiments.

In the first Office Action in PC 3597A the Patent Examiner rejected the 6-deoxy-tetracycline claim on the ground of prior art inherent coproduction, relying, this time, solely on Cyanamid's United States patent as inherently producing the same.

On September 24, 1959 Pfizer filed its PC 3597C application, and again using Example I of PC 3597A, stated that "an additional active entity appears on the papergram" which "is thought to be the C-6 epimer."

Oglesby and Patent Office Future Policy

At the same time, Pfizer was seeking to involve its PC 3597A application in the patent interference previously declared with Cyanamid on the related 6 DMDO compound. On September 21, 1959 Oglesby interviewed Mrs. Merker, as well as Mr. Marcus, Acting Primary Examiner of Division 6, the two Examiners who were then handling both the interference and the PC 3597A application. In an intraoffice "memo" to Hutz, Oglesby reported that interview:

> 7[I]n a generalized discussion precipitated by their mention of the F.T.C. hearing,[17] these Examiners made it clear that the *future* policy of Division 6, as approved by Lidoff, would be to refuse allowance of a claim directed to a compound per se inherently produced by a prior art reference even though such compound was undetected and unrecovered by the reference and ir-

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[17]The F.T.C. hearings referred to concerned the F.T.C.'s complaint filed July 28, 1958 charging that Pfizer had fraudulently induced the Patent Office to issue a patent on tetracycline, and that Cyanamid and Bristol had withheld material information from the Patent Office to assist Pfizer in obtaining its tetracycline patent. The F.T.C. also charged a conspiracy between those and other drug companies in violation of the antitrust laws. The F.T.C. examiner's report, finding in favor of Pfizer (and other drug companies) and dismissing the complaint, was filed on October 31, 1961. That report and decision was reversed by the F.T.C. in August 1963.

> respective of the amount produced, i.e., assuming that the amount was, of course, detectable [emphasis added] * * * I made it clear that I disagreed with such rejections.

That memo also notes, "No mention was made of the Cyanamid Australian patent which was cited and applied in PC 3597 but not cited in PC 3597A."

Also in evidence is a letter dated September 23, 1959 from Oglesby in Wilmington, Delaware, to Dr. Carnahan of Pfizer in Brooklyn referring to PC 3597A. (59) In it, Oglesby wrote:

> The Australian patent of Cyanamid as cited in PC 3597 was discussed with Dick Hutz and we concluded that we were neither morally nor legally obligated to call the reference to the Examiner's attention for the reason that we are convinced that 6-deoxytetracycline is patentable over any minor amount of that compound which may have been coproduced with tetracycline. If the next Office Action applies this reference, we will then be forced to argue our position and the chances are good that Division 6 will not accept such argument and that it will be necessary to appeal to the Board of Appeals.

Also, Oglesby wrote: "[P]lease see if it is possible to locate a foreign patent corresponding to the Australian Cyanamid patent but of a date early enough to be a statutory bar against the two pertinent Cyanamid applications which were filed on March 1, 1957."

In his September 22, 1959 memo (60) Oglesby noted: "Subsequent to the above [i.e., subsequent to his discussion with Merker and Marcus on the day before] and at my request Bob Carnahan now advised that he has located the Belgian counterpart of the referred to Cyanamid Australian patent."

The letter dated September 23 also bears a "9/23/59" stamp in Pfizer's legal division even though the letter was mailed and not hand-delivered. (61) Because Oglesby's September 22 memo notes the receipt of the information from Carnahan which he purportedly requested in the letter dated September 23, and because no mention was made in that letter of the stated "future policy" of Division 6, this court concludes that the letter dated September 23 was in fact dictated before the September 21 interview with the Patent Office and was, in the ordinary course of office handling, typed and sent therafter. This court does not accept it, therefore, as representing the state of mind of Hutz and Oglesby *after* they had received notice of the "future policy." This conclusion is further bolstered (without inferring thereby that any more bolstering was needed) by what this court accepts as a fact, viz., that on October 1, 1959 Oglesby did call the Australian reference to the Examiners' attention, as indicated below.

The Examiners' "future policy" lasted only until October 1, 1959. In his memo report of October 2, 1959 on an interview with Mrs. Merker and Mr. Marcus on October 1, 1959 Oglesby states: "Mr. Marcus pointed out that they would not rely on inherent coproduction unless there was some suggestion in the reference that the claimed compound might be produced, i.e., the division would not apply such a reference unless there was a reasonable indication from the reference itself of coproduction . . . ."[18] In any event,

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[18]IR has maintained that Oglesby used his memos to "salt the mine" because he was trying to avoid the problems arising out of the F.T.C. investigation into the production of tetracycline. In October of 1954, Pfizer's (Conover's) tetracycline application was rejected on the basis that the prior art process for the production of chlortetracycline must have coproduced such substantial quantities of tetracycline that the public was actually receiving the therapeutic benefits of tetracycline when it bought chlortetracycline. The F.T.C. complaint against Pfizer, Cyanamid, et al., was filed July 28, 1958 (See Note Q). At the time Oglesby was making his memos regarding his discussion with Merker

(footnote continued on following page)

the Cyanamid Australian (Boothe) patent and its Belgian patent counterpart was brought to the Examiner's attention on October 1, 1959. Oglesby then made a bona fide analysis of the reference in the Australian patent relative to the uptake of 1.15 moles of hydrogen in the process and as to whether that could be considered as suggesting coproduction of 6-deoxy-tetracycline (ultimately). When Mrs. Merker inquired if Pfizer had repeated the pertinent example, Oglesby replied "yes", but explained that it was a very preliminary effort and that Pfizer would not like to go on the record as to Pfizer's findings of an indication of coproduction since no qualitative nor quantitative work had been done. When Oglesby asked if the discussion should be made a matter of record. Acting Chief Marcus suggested that nothing be done until the Solicitor Schimmel had reached a decision as to the values of certain Conover (Pfizer) depositions and the Boothe patent as prior art reference. (62)

That the Patent Office was confused and uncertain as to how far it should expand its interpretation of the "von Bramer doctrine"[19] is shown not only by the above shifts

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and Marcus in 1959 regarding coproduction rejections, the F.T.C.'s hearing examiner had not completed taking evidence. As heretofore indicated, it was not until October 31, 1961 that the hearing examiner, in his decision, cleared Pfizer and the other defendants of all charges, including fraud in the Patent Office; his decision was reversed by the F.T.C. in August 1963.

Examiner Lidoff did not testify until 1966 when the F.T.C. case was on remand. Pfizer's doxycycline patent was issued on August 10, 1965.

[19]In Re von Bramer, 127 F.2d 149, 53 USPQ 345 (C.C.P.A. 1942) involved a patent application filed in 1936 for the addition of a "N-(primary alkyl) aminophenol" to gasoline to stabilize it from and retard deterioration.

> The prior art disclosure was what is known as the "Geneva" name of a chemical compound defining a molecular structure * * * [T]he predictable properties [of the compound] were found in any similar compound, and those compounds were capable of synthesis by recognized classical organic reactions. Furthermore * * * there were statements in a number of prior art references that the compound relied upon as anticipatory had been made and used, and that the 5 carbon atom alkyl limitation * * * [was] * * * an arbitrary and meaningless distinction from the prior art
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> . . . .
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> In Re Phillips Petroleum Co. v. Ladd, 219 F.Supp. 366, 138 USPQ 421 (D.C.D.C. 1963).

on the part of Examiners Merker and Marcus but by the inaction on the part of the Solicitor which followed. After the October 1 conference, Oglesby made repeated efforts through Acting Chief Marcus to get a ruling from the Solicitor. (63) On November 24, 1959 Acting Chief Marcus informed Oglesby that when the Solicitor decided the matter then the Australian reference would or would not be applied, depending upon the Solicitor's ruling, and that Pfizer "needed to do nothing in PC 3597A." (64) Oglesby, in an attempt to get the matter settled, phoned the Solicitor, who promised an opinion by December 23, 1959. (65) On December 21, 1959, Mr. Marcus told Oglesby that the Solicitor had not yet sent down a decision, and that the Solicitor was

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The Patent Court of Appeals held that where the chemical nomenclature was, in effect, sufficient to disclose the structure of the compound in detail, it amounted to sufficient anticipation. In von Bramer, the prior art suggested the use of the applicant's chemicals in motor fuels as a gum inhibitor. The Court held that the fact that the applicant's compound containing 5 carbon atoms was a better inhibitor than that which contained 4 did not lend patentability to the claims. Then the von Bramer court concluded, "It is not necessary that a reference patent for a device or chemical compound disclose an operative process for producing the article or product," citing cases. The Patent Examiners thereafter took this last statement as generally applicable law, without giving full weight to the facts of von Bramer itself or the facts in the cases cited for the statement, and proceeded to develop their own "von Bramer doctrine," gradually expanding the application of von Bramer to the extent of ruling that the mere printed conception or the mere printed contemplation which constitutes the designation of a compound was sufficient to show that such a compound was old, regardless of whether the compound was involved in a Section 102 or 103 rejection. Thus, the Patent Office was rejecting patent applications for chemical compounds, though novel and new, if any printed publication showed even the name or molecular structure of the compound, although the compound so named or described had never been made and no process for preparing the new compound was known to a person of ordinary skill in the art.

then on leave. (66) In February 1960 Oglesby again inquired about the Solicitor's decision (67) and Mr. Marcus again could only state that the Solicitor had not yet decided the matter, and again suggested that Pfizer wait for that decision.

The Solicitor never did issue a decision, but on October 4, 1961 the Patent Office issued an Official Action in PC 3597A. (68) That Action did not cite or apply the Cyanamid Australian patent. That Official Action was issued by Examiners Marcus and Adams. (69) Oglesby therefore concluded that the Patent Office had decided that the reference to 1.15 moles, in the Australian Patent, did not suggest prior art coproduction.

Regardless of what Mrs. Merker and Mr. Marcus thought the "future policy" of Division 6 might be, this court is convinced that it has never been the law that unrecognized or unappreciated coproduction of a small amount of a compound without a suggestion of that fact being shown in the prior art can be held as anticipating that compound.

The Courts, Supreme, Appellate, and District, consistently, since Tilghman v. Proctor, 102 U.S. 707 (1880), have held that unintended and unrecognized prior production does not negate novelty. In Tilghman, upholding a patent for a process of separating fat acids from glycerine, the Court said:

> If the acids were accidentally and unwittingly produced [by prior art process] whilst the operators were in pursuit of other and different results, without exciting attention and without it even being known what was done or how it had been done, it would be absurd to say that this was an anticipation of Tilghman's discovery.

102 U.S. 711-12. In Eibel Co. v. Paper Co., 261 U.S. 45, 66 (1923), involving a paper-making wire used in paper-making machines, the Court said:

> In the first place we find no evidence that any pitch of wire used before Eibel had brought about such a result as that sought by him, and in the second place if it had done so under unusual conditions, accidental, results, not intended and not appreciated, do not constitute anticipation.

In Pittsburgh Iron and Steel Foundries Co. v. Seaman Sleeth Co., 248 F. 705, 709 (3rd Circuit 1918), one finds:

> If any one of the alleged anticipating alloys was Adamite, that fact, so far as the record shows, was not known to those who produced it or used it and not being recognized as a new product with its distinctive characteristics, its production was purely an accident without profit to the art and without value as anticipation.

In International Nickel Co. v. Ford Motor Co., 166 F.Supp. 551, 119 USPQ 72 (S.D.N.Y. 1958), where a patent on nodular iron was involved and the evidence showed that Mack Truck Co. might have produced "over a half million inserts for new truck engines" according to a process yielding "graphite structures equal to or superior to the poorest depicted in the patent suit," Judge Irving Kaufman stated:

> Mack either failed to recognize or was indifferent to the presence of whatever nodular iron may have resuulted from its process, [its] production of magnesium-induced nodular iron * * * was purely a matter of chance and not the inevitable result of its process * * * it is clear that the occurrence of retained magnesium in the Mack inserts in quantities sufficient to form nodular iron must be regarded as accidental and unrecognized under the rule of Tilghman v. Procter * * * [N]ot only was Mack unaware that it had created a new iron but [it] * * * never consciously pursued the product here in question for any purpose. Nor did it

> ascribe any meaningful function to the retained magnesium * * *
>
> The patent law seeks to reward those who teach the public how to perform, process, or construct things which the public theretofore was unable to do because of insufficient information. If a product or process is accidentally produced and unrecognized by the prior art, it is unlikely that the opportunities which it presents would be within the reach of the general public * * * [I]n the last analysis the issue of anticipation as well as invention is to be determined by how much new information the patentee has contributed to the art.

166 F.Supp. 560-63, 119 USPQ 79-82.

In Ritter v. Rohm and Haas Co., 271 F.Supp. 313, 154 USPQ 518 (S.D.N.Y. 1967) the court held that the prior inherent production of Ritter's patented amides in the course of a prior art process having the same reaction conditions and initial ingredients was not an anticipation. After quoting Tilghman, supra, the court continued, "The existence of Ritter's process was an unrecognized by-product as far as Mahan is concerned and therefore Mahan does not anticipate Ritter." (P. 346)[20]

Written Records

IR's claim that Pfizer violated its duty to conduct all business before the Patent Office in writing and make a written record of the substance of Oglesby's interviews with

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[20]See also Kuehmsted v. Farbenfkbriken of Elberfeld Co., 179 F. 701 (7th Cir. 1910); Parke-Davis & Co. v. H.K. Mulford Co., 189 F. 95 (S.D.N.Y. 1911), aff'd 196 F. 496 (2nd Cir. 1912); Merck & Co. v. Olin Mathieson Chemical Corp., 253 F.2d 156, 116 USPQ 484 (4th Cir. 1958); Filterite Corporation v. Tate Engineering, Inc., 318 F.Supp. 584, 167 USPQ 450 (D.Md. 1970), aff'd 447 F.2d 62, 170 USPQ 190 (4th Circ. 1971); In Re Felton, 484 F.2d 495, 179 USPQ 295 (C.C.P.A. 1973); Silvestri v. Grant, 496 F.2d 593, 181 USPQ 706 (C.C.P.A. 1974), cert. denied, 420 U.S. 928, 184 USPQ 641 (1975); Saf-Gard Products, Inc. v. Service Parts, Inc., 370 F.Supp. 257, 181 USPQ 297 (D.Ariz. 1974).

the patent Examiners was raised and reviewed in Pfizer, Inc. v. International Rectifier Corp., 528 F.2d 180, 193, in note 27:

> Although [IR] contend[s] that under Patent Office Rules 2 and 133, 37 C.F.R. §§1.2, 1.133 (1961), all information must be submitted to the Patent Office in writing, it appears that the practice is not so restrictive and that many items are discussed with the patent examiners orally rather than in writing * * *. The U.S. Patent Office examiner's manual explains the practice under Rules 2 and 133 and distinguishes situations in which an oral agreement is reached between the attorney and the examiner from those in which an interview is had but no agreement is reached. In the former situation, a formal memorandum of the interview, signed by both, must later be filed by the applicant; but in the latter situations the *examiner* is expected to place in the file an informal memorandum that should later be "removed from the file if and when the case is passed to issue." U.S. Patent Office, Manual of Patent Examining Procedures §713.04 (3d ed. 1961), as amended (1970), reprinted in, A. Deller, Walker on Patents ch. XVI, appendix at 383 (2d ed. 1972). The Supreme Court has recognized that "all facts concerning * * * [possible fraud or inequitableness should] be submitted formally or informally to the Patent Office" to safeguard the public interest in proper patent administration. Precision Instrument Mfg. Co. v. Automotive Maint. Mach. Co., supra, 342 U.S. at 818, 65 S.Ct. at 999, 65 USPQ at 139-140.
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> * * * [W]e believe evidence of matters brought orally or informally to the attention of the Patent Office is relevant to the issues of fraud and inequitable conduct by the patentee and should be admitted in the instant litigation as to these issues, if sufficiently reliable, regardless of the patentee's alleged noncompliance

with Patent Office rules and procedures governing proceedings determining statutory patentability.

As this court indicated above and in Note R, supra, this court does not believe that Oglesby either "salted the mine" or perjured himself in his testimony concerning his memoranda regarding his interviews with the patent Examiners or that he did not, with all honesty, attempt to set forth in those memoranda the substance of his discussions with the Examiners. This court finds that Oglesby's memoranda are "sufficiently reliable" to permit this court to consider them as relevant to the issues of fraud and inequitable conduct, on Pfizer's part, as raised by IR.

This court finds that IR has failed to sustain its burden of proof that Oglesby omitted filing a written record of his interviews with the patent Examiners while processing the PC 3597 series for the purpose of deceiving the Patent Office and as part of a pattern of fraud and inequitable conduct on his (Pfizer's) part in the processing of Pfizer's applications under the PC 3597 series (as well as the 4429F series).

The PC 3597 Series: Conclusion

This court, after a detailed study of all of the allegations and issues raised by IR concerning Pfizer's and its attorneys actions during the prosecution of the PC 3597 application series, finds not only that the PC 3597 series and interference "are not important because of any final result", (70) but also finds that neither Pfizer nor Oglesby, during the processing of the PC 3597 series, suppressed any prior art relative to the coproduction issue, nor suppressed any evidence of coproduction or violated Patent Office Rules 2 and 133, as interpreted by the Patent Office. (71)

Coproduction and PC 4429F

IR also maintains that Pfizer concealed coproduction during the process of its doxycycline application. PC 4429F.

On May 23, 1960 Pfizer filed the PC 4429 application directed to "halogenated tetracyclines." The application discloses and claims the hemiketals and the 6-methylene compounds, including 11a-halo-methacycline and methacycline. It was filed in the names of Drs. Stephens, Blackwood, Rennhard, and Beereboom. C.i.p. application numbers 4429A, B, C, D, and E were subsequently filed, still directed to the same compounds.

PC 4429D was filed December 19, 1960 and on May 16, 1961 the Pfizer methacycline patent No. 2,984,686 was issued thereon. None of those applications in the PC 4429 series suggested coproduction of either alpha or beta doxycycline, nor was there any Patent Office rejection based on inherent coproduction, nor any filed memorandum on the issue.

The most pertinent art at that time relevant to Pfizer's (alpha) doxycycline was that of the known 6-deoxytetracyclines, which included the 6-deoxy-5-oxy-tetracycline, the McCormick compound (beta) doxycycline. (72) Its preparation by the catalytic hydrogenolysis of oxytetracycline was disclosed in a number of publications, including Lederle's Belgian Patent #572,584, (73) but the Belgian Patent did not disclose or teach how to make (alpha) doxycycline.

In an attempt to gain the priority date of PC 3597A, November 12, 1958, and thus secure a filing date behind Cyanamid's Belgian Patent on its McCormick compound (beta doxycycline), attorney Frost of Pfizer's Legal Division instructed Oglesby by letter of March 7, 1961 to file Pfizer's doxycycline product claim as PC 3597D, i.e., as a c.i.p. of PC 3597A, apparently fearing that the Belgian Patent

"may present a von Bramer reference against the 6-epi-6-deoxy derivatives (alpha) of the tetracycline and aureomycin series. (74) Before receiving the Frost letter, however, Oglesby had become satisfied that Cyanamid would ultimately be awarded priority in the interference to both the McCormick compound and thes546 DMDO compounds.

Under date of April 21, 1961 Oglesby therefore wrote to Pfizer advising against filing the proposed PC 3597D stating that it wold not be given the benefit of the filing dates of PC 3597A and PC 3597C because (a) there was inadequate disclosure of utility in those applications, and (b) there was no positive disclosure of the actual existence of the compound (doxycycline) in the reaction mixture. He stated that "the first inventors of this 6-epi compound . . . are obviously the inventors of the PC 4429 series . . . ." He continued that "PC 4429F should be expanded so as to claim the products originally intended for 3597D as well as the process of 4429F." (75) On May 5, 1961 Oglesby filed PC 4429F.

Pfizer's Pakistan Patent and Coproduction

IR says of that PC 4429F application:

> The application made no reference to the PC 3597 series, no reference to Stephens' belief that he had produced doxycycline in his 1958 Campaign (which was the basis of Example I of PC 3597A and C), and made no reference to Stephens' belief that the Pakistan Patent coproduced doxycycline or Stephens' further belief that [Lederle's] Belgian Patent also coproduced doxycycline. (76)

In its Post Trial Reply Brief, Pfizer painstakingly traced IR's coproduction allegations as set forth in IR's Post Trial Brief and item by item, issue by issue, challenged IR's contentions.

Concerning the Pakistan Patent, Pfizer says:

IR, in a blatant misrepresentation of the facts, states: "Oglesby concealed the fact that the Pfizer Pakistan patent had issued on PC 3597 and that Example I thereof was the *same* as Example I of PC 3597A and C which '*suggests*' coproduction." (78) That statement is false, as IR knows.

12/2/57 PC 3597 filed in U.S. (no speculation of possible 6 epimer). (79)

3/18/58 Pakistan patent No. 108,981 (counterpart of PC 3597) filed (no speculation of possible 6 epimer). (80)

5/16/58 Stephens' Notebook 2983 page 247, "Speculations on possibility of 6-deoxyterramycin isomers . . . search for another isomer." Dr. Stephens' first speculation that Rf 0.5 spot might be the 6-epimer. (81)

12/12/58 PC 3597A filed (with speculation). (82)

9/24/59 PC 3597C filed (with speculation). (83)

Example I of the Pakistan patent is *different* from PC 3597A and C, does not contain any speculation of 6-epimers, and thus does not suggest coproduction. IR seeks to accomplish its purpose by referring to the 1959 *issue* date of the Pakistan patent. However, the chronology demonstrates that the Pakistan application was *filed* on March 18, 1958, two months before Dr. Stephens even speculated on the possible existence of 6-epimers and, as IR admits, prior to the commencement of Dr. Stephens' 1958 campaign. (84) Thus, the Pakistan patent could not, and does not, contain any reference to Dr. Stephens' subsequent speculation.

IR plays fast and loose with the facts when it asserts that Examiner Adams testified that the Pakistan patent and PC 3597A and C "each contained the same OTC hydrogenation example — namely Example I." (85) In fact the examples are different and neither Mr.

> Adams nor anyone else testified that they are the same. IR's questions to Mr. Adams strictly and artificially *limited* his comparison of the examples to the portion which *precedes* the speculation contained in PC 3597A and C, as is clear from the transcript. (86)

Pfizer's analysis, supra, is correct. PC 3597 did *not* contain any reference to a possible 6-epimer nor did it contain any such reference at the time the Pakistan patent #108,981 was issued in 1959. (87) The Pakistan patent therefore did not become a "prior art reference" for consideration by the Patent Office.

The Murai Tests and Coproduction

There is no question but that when PC 3597A and C were filed in 1958 and 1959 Dr. Stephens himself believed that his experiments with the hydrogenation of fermentation-produced tetracyclines had *possibly* produced both the alpha (Pfizer's form) and beta (Cyanamid's form) of doxycycline. IR states that "Murai testified it was both Stephens' 'belief' and Blackwood's 'belief' that doxycycline had been coproduced in Stephens' 1958 campaign." (88) This statement is not correct. Murai's testimony on cross examination was that "he [did not know that] Dr. Stephens * * * believed" that by hydrogenating oxytetracycline some doxycycline was produced. (89)

By letter of April 21, 1961 Oglesby wrote to Pfizer's Dr. Knuth regarding both PC 3597D and PC 4429F. That letter, confirming a telephone call, advised Pfizer that its 6-epi-6-deoxy-5-oxytetracycline should not be filed as PC 3597D because

> * * * [I]nsofar as 6 epi 6 deoxy 5 oxytetracycline is concerned, proposed PC 3597D would not be given the benefit of filing dates of PC 3597A and PC 3597C for the reasons:

(a) there is inadequate disclosure of utility in the latter applications, and

(b) there is no positive disclosure of the actual existence of the compound in the reaction mixture. (90)

Oglesby testified that at about this same date he discussed the possible doxycycline coproduction in Stephens' oxytetracycline hydrogenolysis. Stephens testified that he told Oglesby that he no longer had confidence that his speculation of possible doxycycline coproduction was correct. (91) Oglesby also testified that he was made aware about that time that Dr. Stephens no longer adhered to his speculation or "belief" of inherent coproduction as reflected in 3597A and C. (92)

In his April 26, 1962 intraoffice memo analyzing Lederle's application corresponding to its British patent #845, 649 (identical with its Belgian patent #572,584), Oglesby stated that Lederle's hydrogenation process "produces the so-called beta isomer." Further, in this memo he states, "PC 3597C discloses that the alpha isomer is coproduced by the hydrogenation process. Although this is now known to be incorrect, it is an admission on the record that Lederle could employ to insist that their claim to 6 deoxy 5 oxytetracycline is generic to both isomers." (93)

In his remarks in Pfizer's second amendment to the doxycycline application, on April 29, 1963 Oglesby stated: "* * * the Examiner recognizes that these references [the Belgian patent and other patents] do not, in fact, produce the 6-epi [alpha] derivatives claimed herein. Instead they utilize the hydrogenolysis procedure * * * and actually produce 6-deoxytetracyclines of normal [beta] configuration * * *." (94)

It was not until December 1963 that the F.T.C. issued its opinion in the Conover tetracycline case wherein it held that Pfizer had committed fraud on the Patent Office by

concealing its knowledge and misrepresenting the facts representing the prior art inherent coproduction of TC.

In his intraoffice memo of March 12, 1964 concerning PC 3597C and PC 4429F Oglesby stated:

> PC 3597C stands rejected in view of the unfavorable interference decision. Page 10, line 9 and Example I of this application disclose coproduction of 6-epi-6-deoxy-oxytetracycline as indicated by papergram work. Stephens advises that the amount in question is of the same order of magnitude as tetracycline coproduced in Duggar 2209 Aureomycin fermentations.[21]

Since "PC 4429F claims the 6-epi compounds of oxytetracycline, tetracycline, and chlortetracycline," and Modance was "awaiting our contact of an interview,"[22] Oglesby was clearly concerned whether it was necessary to disclose these facts to the Patent Office in 4429F. (95)

As reflected in his intraoffice memo of March 20, 1964, Oglesby had made a "thorough review" of PC 4429F "and related applications." He states that he referred back to Example I of PC 3597C which hydrogenated "4g. amphoteric 5-oxytetracycline" and he again notes that in addition to several oxytetracyclines produced by that Example, "another active entity" in the crude product mixture is said to appear on the papergram having Rf 0.5 which "is thought to be the C6 epimer of 6-deoxy-5-oxytetracyclines." He continues. "We are advised that Pfizer has never detected the presence of any 6-epi-6-deoxy tetracycline via hydrogenation of tetracycline. In other words, we have no reason to even suspicion coproduction of this compound." He then states that he reviewed the Von Wittenau publications and

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[21]A reference to an issue in the F.T.C. case.

[22]Patent Examiner Modance was then in charge of both the PC 3597C application and the PC 4429F application.

the proposed Stephens', et al. 6 deoxy tetracycline stereochemical publications and found that they showed "no recognition of the preparation of 6-epi-6-deoxy-5-oxytetracycline via hydrogenation of oxytetracycline." Nevertheless, he asked Pfizer's Dr. Knuth to produce Dr. Stephens' records supporting. Dr. Stephens' conclusions of coproduction of the 6-epi compound during during hydrogenation of oxytetracycline. (96)

As appears in that memo, Oglesby's concern was that if Stephens' 1958 hydrogenation experiments had actually coproduced Pfizer's 6-epi compound, then Pfizer's April 28, 1963 amendment in PC 4429F, supra, stating that "the Examiner recognizes that these references [Cyanamid's Belgian Patents I and II] do not, in fact, produce the 6-epi derivatives claimed [by Pfizer] * * * etc." was incorrect. Oglesby recognized that his arguments in that April 29, 1963 amendment regarding the application of In Re LeGrice[23] and "the 5 position stereochemistry" would be weakened and/or should be retracted.

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[23]In Application of LeGrice, 301 F.2d 929, 133 USPQ 365 (C.C.P.A. July 1962) the court was concerned with an application for a plant patent which had been rejected under Section 102(b) applying the von Bramer doctrine, because in the National Rose Society Annual of England the applicant had been described as raising the roses upon which a patent was sought and plant catalogs had showed colored pictures of the roses. None of the publications, however, had stated the procedure by which the particular roses were developed and produced. Thus, neither the name nor the picture of the roses was actually sufficient to apprise one skilled in the art how to produce them. Nothing in any of the publications permitted a rose grower, simply from those publications alone, "without experiment or the exertion of his inventive skill," to reproduce the roses.

As the LeGrice court pointed out, Section 36 of "Robinson on Patents" stated: "Invention necessitates not only the conception of a new idea by the mind but the reduction of that idea to practice in some tangible and useful form. This later process cannot be accomplished by speculation only." Although the LeGrice court was concerned with plant patents, it stated,

> In the case of manufactured articles, processes and chemical compositions * * * written descriptions and drawings in publications can often enable others to manufacture the article, practice

(footnote continued on following page)

He concluded:

> Art [Connolly], Dick Hutz[24] and I have agreed that if present arguments of record are inaccurate in any

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> the process or produce the chemical composition. Thus, with respect to publications in these fields, there is a valid basis in public policy for 35 U.S.C. Section 102(b) which bars the granting of patents on inventions described in a printed publication in this or a foreign country * * * more than one year prior to the date of the application for patent in the United States.
>
> The knowledge thus made available to the public must, if it is to anticipate an invention, be practical and complete * * *. As to what constitutes a "publication", we think the controlling view here is that stated in Seymour vs. Osborne, 78 U.S. 516, 555 * * * Patented inventions cannot be superseded by the mere introduction of a foreign publication of the kind, though of prior date, unless the description and drawings contain and exhibit a substantial representation of the patented improvement, in such full, clear and exact terms as to enable any person skilled in the art or science * * * to make, construct, and practice the invention to the same practical extent as they would be enabled to do if the information was derived from the prior patent. Mere vague and general representations will not support such a defense, as the knowledge supposed to be derived from the publication must be sufficient to enable those skilled in the art or science to understand the nature and operation of the invention, and to carry it into practical use * * * the account published * * * must be an account of a complete and operative invention capable of being put into practical operation.

As the court in LeGrice held, before any publication can amount to a statutory bar to the granting of a patent, its disclosure must be such that a skilled artisan could take its teachings in combination with his own knowledge of the particular art and be in possession of the invention. Although, as immediately noted by Oglesby, LeGrice negated the premises underlying the Patent Office's application of the von Bramer doctrine, the Patent Examiners did not immediately give up their own interpretation of the von Bramer doctrine (see Note S above). As Oglesby noted in his intraoffice memo of April 14, 1964: (97)

> Modance and I also discussed the In re LeGrice decision. He advised that Giles Rich had informed him that this decision by no means reverses the von Bramer decision. In view of this, he states that his group follows the position that a von Bramer rejection is still in order, i.e., the dicta of In re LeGrice does not apply. He pointed out, however, that they were from day to day expecting a decision that would reverse the von Bramer holding but that so far the courts had avoided doing this by finding another basis on which to decide the facts before them.

[24]The senior partners of Oglesby's firm.

respect because of any evidence or a mistake on my part, every record, etc., showing the same should be presented to the Patent Office and the Patent Office should be permitted to question the inventors and all others.

The problem of coproduction still thereafter concerned Oglesby because in his intraoffice memo of March 31, 1964 he again reiterated his belief that Stephens' August 1960 record "referring to a Rf of about 0.4" and the Stephens' January 1961 report referring to the "long-sought epimer" suggest little reason for concluding coproduction of the epimer claimed in 4429F via hydrogenation of terramycin. He further noted, "Even if there is coproduction, the amount involved is less than 1 percent by weight of the crude hydrogenated product." Oglesby then determined that "despite the foregoing we are obliged to bring this situation to the attention of the Patent Office if Stephens now feels that coproduction is a fact." (98)

as his case memo of April 14, 1964 indicates, Oglesby discussed his problems in a conference with Pfizer's chemists Solomon, Conover, Stephens, and Knuth and therein indicated that after the conference he concluded that "there was no reasonable basis for speculating prior art coproduction of the 6-epi-6-deoxy compound claimed in PC 4429F", and set forth his reasons, including: "One would expect the alpha isomer of 6-deoxy-tetracycline to be coproduced if the alpha isomer of 6-deoxy-5-oxytetracycline is coproduced. However, there has never been any evidence of the existence of the former compound." As the memo indicates, because Stephens still insisted that there was substantial likelihood of coproduction, Oglesby concluded that he "had no alternative but to call the situation to the attention of the Patent Office and bring in all the records available for its consideration." He therefore recommended that

Pfizer's research undertake to repeat the work leading to Stephens' present conclusion. (99) Oglesby then informed Examiner Modance of the coproduction investigation and advised that the result would be discussed with him. (100)

Shortly thereafter, Pfizer's Dr. Murai, its expert in the isolation of antibiotics from complex mixtures, was given the assignment to determine whether doxycycline was produced in the hydrogenolysis of oxytetracycline by Stephens' procedures. Some of Stephens' old samples still existed. After a discussion with Dr. Stephens concerning Stephens' prior information on the Rf 0.5 trace component, Murai examined Stephens' samples, as well as Stephens' notebook containing his 1958 paper chromatograms.

Murai subjected old samples received from Stephens and Pfizer's Shannon, as well as Pfizer's Gilman's new samples to chromatography. He also employed the Craig countercurrent distribution techniques which he considered the best technique for his purpose.[25]

As Dr. Stephens testified (102) the hydrogenolysis procedures used to prepare the samples for Dr. Murai were the same as that which had been the basis of his (Stephens') observation of the Rf 0.5 spot in 1958.

This court heard and observed Dr. Murai during his days of intensive examination and cross-examination during the trial. This court also heard the testimony of Drs. Stephens and Mitscher and has reviewed their depositions, together with pertinent exhibits. This court is satisfied that, contrary to the inference urged by IR, Dr. Murai did not undertake his evaluation experiments with the objective in mind of disproving coproduction in order to save the patentability of Pfizer's 4429F and that the experiments made by Murai

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[25]IR's expert, Professor Mitscher, also employed countercurrent distribution as a purification procedure in his own research. (101)

and his conclusions therefrom were made with the honest intention to produce results of high scientific veracity.

Murai testified that he did not utilize other purification procedures, such as elution from chromatograms or column partition chromatography; that he had considered these other techniques but chose to carry out his own techniques over the other two because he was more familiar with and more sure of the verity of his results with those he used.

That Dr. Murai was conducting his experiments to the best of his professional ability and standards of integrity is reflected in Dr. Knuth's letter of June 16, 1964 to Oglesby: (103)

> Research now reports that the unknown active ingredient is present in oxytetracycline hydrogenation crudes at a level of about 0.1 weight percent or less based on total solids * * * [Dr. Murai] tells me this assignment is one of the more difficult isolation jobs he has faced so far, has spent about 6 weeks on the problem, along with one assistant, both full time. He also tells me he is employing chromatographic techniques developed in the last two years to detect and estimate the concentration of the component in question.

Dr. Knuth continues to report that Murai concludes that Dr. Stephens' techniques of 1958 and 1959 indicated "about four times the actual concentration, because they failed to distinguish between several trace components, only one of which is still a candidate for identity with GS 3065" (Pfizer's code number for doxycycline).

IR maintains that Murai never achieved such purity in his samples as to give them the validity required for his conclusions, claiming that Dr. Murai, in 1964, concluded his sample 4990-286-90 was 50% pure; then in 1979, testified that the sample was 90% pure. (104) Dr. Murai testified

that he had concluded in 1964 that the sample was substantially homogenous, a conclusion based upon the clean chromatography results for that sample. (105) He testified that the 50% purity figure in his June 1964 report had been calculated by him from a comparison of the Uv curves of doxycycline and the unknown sample upon the hypothesis that if the sample is doxycycline, it is only 50% pure. Since his own procedure suggested that the sample had a greater purity than 50%, Dr. Murai therefore reasoned that "if the assumption that this material is doxycycline is invalid, then the calculation [of the 50% purity of the sample] is invalid." (106) This court is satisfied that Dr. Murai further increased the purity thereafter through additional countercurrent distribution procedure. (107)

The court finds that the product from which Dr. Murai drew his final conclusions was substantially homogenous and "clean enough" for Ir (infrared) and Uv (ultra-violet) measurements. Upon comparison of the ultra-violet curve obtained upon Sample 4990-286-90 with the curve of 1964 authentic doxycycline, Murai found and so illustrated to the court that the spectra differed in peak locations, peak heights, peak intensity ratios, such as to lend credence to his conclusion, on about June 10, 1964, that the sample did not exhibit the Uv characteristics of doxycycline. (108) Dr. Murai also compared the Ir spectrum of the same sample with authentic doxycycline and found that the spectrum of the unknown lacked a substantial number of peaks characteristic of doxycycline. This court was satisfied that his conclusion that the substances were not identical was reasonable and logical. (109)

This court finds that Murai had an honest basis for arriving at his conclusion that the entity which he isolated was not doxycycline. His conclusion resulted not from one sample or from one test, but rather from some 18 Uv curves obtained

on the unknown and doxycycline after comparison of peak intensity and peak intensity ratios. (110) Murai's unequivocal testimony, which this court believes, was that the differences observed between the curves on the unknown entity and doxycycline "confirmed, strengthened, corroborated and triplicated" his conclusion that "these were two different substances." (111) The conclusion was reportedly based on all available data at that time.[26]

After a review of the results of Dr. Murai's work, Dr. Stephens himself concluded that coproduction did not occur. (112)

Dr. Murai went on vacation on June 30, 1964. Pfizer's Dr. Wagner, who was in charge of Pfizer's physical measurement laboratory and therefore was Dr. Murai's supervisor, reviewed Dr. Murai's notebooks in July and made a handwritten summary (113) of Dr. Murai's data. Wagner independently concluded that the unknown entity isolated by Dr. Murai was not doxycycline. (114) This court accepts Dr. Wagner's, as well as Dr. Woodward's testimony, that in order to prove identity of two compounds all data must be consistent with the identity; that if the two exhibit even five identical physical characteristics and a different sixth, the sixth is the controlling observation in the determination of identity. (115)

IR has shown this court no facts sufficient to permit this court to reach the conclusion maintained by IR that "it is clear that Murai's patent work was aborted and that his work never reached a stage where any conclusion negating coproduction could be drawn from either the Uv or the Ir data." (116)

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[26]This court feels that nothing is to be gained by herein reciting the step-by-step procedure followed by Murai or the results of each experiment.

This court's review of the techniques used by Murai, his results therefrom, and the conclusions he drew satisfied this court that the samples from which he drew his ultimate conclusion regarding "coproduction" provided a sound basis for Oglesby's ultimate representation to the Patent Office regarding the results of Murai's work.

On Tuesday, July 7, 1964, Oglesby reviewed Dr. Murai's work with Dr. Wagner. (117) Oglesby understood that Drs. Murai's and Wagner's final conclusions were that the results were ambiguous. Neither could say positively whether or not coproduction resulted, but from Uv analysis each felt there was probably not coproduction. (118)

At the July 9, 1964 meeting with Patent Examiner Modance, Oglesby informed him of Dr. Stephens' speculation of coproduction as indicated by PC 3597A and C. This court is satisfied that Murai's work was discussed with the Examiner and his conclusions were explained. (119) Modance expressed no interest because there was no coproduction suggested or taught in the prior art. Modance was at this time also the Examiner responsible for 3597A and C, and at that meeting indicated he had no objection to Oglesby's abandoning that application. (120) (This was done later in July.) In his July 27, 1964 report of the interview, (121) Oglesby made this reference to this portion of the July 9 interview: "Additionally, the prior prosecution history of the subject application and related applications was reviewed for the examiner * * *.

IR maintains that "The Modance interview is significant * * * for what Oglesby concedes he did not tell Modance;" (122) viz, (a) "that Stephens * * * believed that if PC 3597A and C coproduced doxycycline then the prior art Belgian Patent [The Cyanamid McCormick patent] process also produced doxycycline;" (b) "that the hydrogenolysis procedure of Example I [of the prior art Pakistan Patent]

was identical to that of Example I of * * * PC 3597A and C'' and Stephens believed ''all three examples produced doxycycline;'' (c) ''that coproduction would have been expected in the prior art processes by other chemists skilled in the tetracycline field;'' (d) that ''Murai's unambiguous chromatographic evidence * * * showed coproduction'' but Oglesby termed it ''inconclusive'' ''additional data'' and (e) that ''Murai's conclusion that coproduction had not occurred * * * was based upon one Uv analysis of an impure sample which had not been recovered by the best available techniques.'' (123)

IR's claims re (a) the ''Stephens Campaign'', (b) the Pakistan Patent, (c) ''those skilled in the art would have anticipated both epimers to have been coproduced in the prior art process'', i.e., in the direct hydrogenation of the tetracyclines (the only person ''skilled in the art'' who had any belief even as to possible coproduction was Pfizer's own Stephens), (d) Murai's evidence, and (e) Murai's conclusions, have already been covered and resolved against IR.

Lederle's chemists, Dr. McCormick and Mr. Jensen, who had developed the McCormick compound, did not have any such belief or anticipation. To the contrary, IR has produced no evidence to indicate that Lederle even suspected coproduction, let alone that coproduction resulted, even though between 1955 through 1974 Lederle's chemist Jensen carried on many catalytic hydrogenations of oxytetracyclines (124) for the purpose, among others, of determining whether both alpha and beta doxycyclines were coproduced in the hydrogenolysis of oxytetracyclines. Upon evaluating Mr. Jensen's work, Dr. McCormick concluded that no alpha doxycycline could be detected in the reaction mixture: ''There was none of the [doxycycline] * * * present; which means possibly zero.'' (125)

Moreover (without inferring that any more is needed), during the years that this case has been going through the judicial process, both U.S.V. Pharmaceutical Corporation, as well as IR, through their own chemists, as well as experts hired by them, had access to the notebooks of Dr. Stephens and Dr. Murai, as well as Gilman's records and the Pakistan Patent. It would have been possible for them to have followed and attempted to duplicate the experiments of each of those chemists. If coproduction in fact thereafter occurred, as Dr. Stephens thought possible, then it would appear that such evidence could have, and should have, been presented to this court. IR has produced no evidence whatsoever that any person "skilled in the art" other than Pfizer's Stephens and Gilman ever detected any such possible coproduction.

It is also noted that before Dr. Murai's investigation was even started. Oglesby advised Examiner Modance of a possible coproduction issue but Modance stated that the division policy was to reject only if the prior art process was the same as that of the applicant. (126) Neither the processes of the Pakistan patent, nor PC 3597C or D, nor the Belgian Patent[27] were the same as that of PC 4429F.

As indicated above, this court is satisfied that Oglesby discussed coproduction with Modance and that since no prior art even suggested coproduction, Modance properly was not concerned with the problems possibly presented by PC 3597A and C.

Later in 1964 Examiner Adams replaced Modance as the examiner in charge of PC 4429F and on January 19, 1965 Adams issued an Official Action rejecting many of the claims and suggesting, on page 3 thereof, that because of

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[27]See Section V, infra.

the asymmetry of the C-6 carbon atom, Pfizer's compound, if produced synthetically, would be expected to have both up and down spatial orientation.

At his February 23, 1965 interview with Adams, Oglesby inquired of Adams as to "whether the full paragraph on page 3 [of the Official Action of January 19, 1965] was impliedly requesting information with respect to the possible coproduction of the alpha 6-deoxy-tetracyclines during catalytic hydrogenation of the corresponding tetracyclines which is known to produce beta deoxytetracyclines." (127) Examiner Adams advised Oglesby that by the term "synthetically" he was referring to total synthesis, not to a chemical conversion of a fermentation-produced product to a derivative. Adams also stated he was not suggesting that coproduction occurred or was even attempting to raise the issue. Adams advised Oglesby that he knew of no prior art total synthesis of the compounds claimed in PC 4429F and thus had no basis for inquiring into coproduction. He also advised Oglesby that a coproduction rejection would not be made unless there was a prior art reference which clearly taught coproduction. (128)

As Examiner Adams stated, the unrecognized, unappreciated coproduction of small amounts of doxycycline, even if it had occurred in the prior art, would not, in 1965, have barred issuance of a claim to doxycycline or represented a basis for rejection. (129) As he said, he could not rely on what those skilled in the art may expect or predict in order to supplement a prior art reference which lacked a suggestion of coproduction.[28] (130)

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[28]See In re Marshal, 578 F.2d 301, 198 USPQ 344 (C.C.P.A. 1978); Saf-Gard Products, Inc. v. Service Parts, Inc., 532 F.2d 1266, 190 USPQ 455 (9th Cir.), cert. denied, 429 U.S. 896 (1976).

Oglesby then advised Adams that applicant's "unrecorded assignee" of PC 4429F had theretofore investigated the possibility of such coproduction, and, with the approval of Adams, reported that in 1958 one of Pfizer's chemists had isolated a bioactive trace component in a product of the hydrogenolysis of 5-hydroxy tetracycline and on the basis of paper chromatography reported that this "product may be the C-6 epimer 6-deoxy-5-oxytetracycline;" that in a 500 gram sample the product obtained by catalytically hydrogenating 5-oxytetracycline did not exceed 0.1%; that additional data obtained in an effort to identify this entity was inconclusive; that the conclusion of the investigator was that "the Uv wave lengths are not those of authentic alpha 6-deoxy-5-oxytetracycline, and that the investigator did not think it was alpha-6-deoxy-5-oxytetracycline." (131) Oglesby further offered, if Examiner Adams wished the same, to supply him with further information on the actual crude materials investigated, procedures employed, and production of the records for examination by the Examiner with the investigator or any other Pfizer chemist. (132)

Examiner Adams did not call Oglesby for any additional information. As Adams said, he was not interested in the details of Pfizer's coproduction investigation since coproduction was not an issue and was not suggested by any prior art. As Examiner Adams stated, it was his practice to make notes during interviews with applicants and when a response was filed following an interview to check his notes against the response. If his notes confirmed the accuracy of the response, they were discarded. If not, he made the discrepancy a record. (133) (This is the practice suggested for examiners by Section 713.04 of the Manual of Patent Examining Procedure.)

This court finds that Pfizer's March 5, 1965 amendment sets forth in detail the information supplied to Adams at the February 23, 1965 conference.

This court finds that IR has not sustained its burden of proving that coproduction actually occurs, or that coproduction occurred under any prior art procedure, or that Pfizer willfully misled or committed fraud upon the Patent Office in its handling of the coproduction issue, or that Pfizer was willfully derelict in fulfilling its obligation of acting with candor with the Patent Office in connection with the coproduction issue.

V. The Belgian Patent and its Diagram

IR commences this attack on the validity of Pfizer's patent by stating,

> [W]hen the doxycycline application was filed and for more than 3 of the 4 years in the prosecution thereto, the *Diagram* of the 1958 Cyanamid Belgian Patent was the most pertinent patent under the von Bramer Doctrine.[29] The issue can be simply stated as: which was more pertinent prior art, the diagram — which Pfizer could not distinguish over — or the compound — which it could distinguish over. (134)

IR's statement does not square with the facts. At the March 29, 1962 interview following the first Official Action, Oglesby gave Examiner Adams a copy of the Belgian Patent and discussed Pfizer's views of the von Bramer question with him. (135) The Belgian Patent was cited as a reference in the next Official Action on October 30, 1962, and Pfizer's views were again discussed with Examiner Berg at the March 6, 1963 interview. (136) The von Bramer question was reviewed in detail in Pfizer's amendment of

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[29]See Note S, supra.

April 30, 1963. (137) Pfizer did not withhold the reference to the Belgian Patent from the Patent Office for "3 of the 4 years of the prosecution" as claimed by IR.

As shown by Frost's letter of March 7, 1961 to Oglesby (138) there is no question but that the form of Pfizer's PC 4429F application was influenced by the existence of the Belgian Patent and its diagram. This diagram was a part of Belgian Patent #572,584 to American Cyanamid setting forth the McCormick process for making 6-deoxy-oxytetracycline. The filing date on the Belgian application was October 31, 1958. The counterparts of that application were also filed in Australia, the Union of South Africa, Britain (British Patent #871,699), and the United States. It must be noted that the Belgian Patent referred to the 6-deoxy derivatives of tetracycline and aureomycin.

Differing from the product of the Belgian Patent (and Pfizer's PC 3597 series) doxycycline was not a 6-epi-6-deoxy derivative of either the tetracycline or the aureomycin series. Instead, it was a derivative of the oxytetracycline or terramycin series. It was the identity of the hydrogen substituents at position 5 between the 6-epi derivatives of the tetracycline and aureomycin series that created a possible von Bramer problem out of the Belgian Patent.

Contrary to the arguments of IR, Dr. Frost's letter to Oglesby of March 7, 1961 (139) does not suggest that the Belgian Patent might be a von Bramer reference with respect to doxycycline or the 6-epi derivaties of the oxytetracycline series. Nowhere in PC 4429F was there any claim of any of the 6-epi compounds of the tetracycline or chlortetracycline series.

Because of IR's co-mingling, without distinguishing, relative and absolute stereochemistry of the tetracyclines in its argument, it must always be kept in mind that when PC

4429F was filed on May 5, 1961 the *absolute* stereochemistry of the tetracyclines had not yet been determined. Pfizer's chemists, apparently because they had that genius, Dr. Woodward, as a Pfizer consultant, were more certain as to the *probable* absolute chemistry of the tetracyclines than Lederle, but that certainty was only *relative* until after Dobrynin's 1962 publication delineated the *absolute* chemistry of the tetracycline molecule. Pfizer's chemists therefore in 1960-1961 were firmly of the belief (and correctly so) that the diagram of the Belgian Patent did not, in fact, depict the product upon which that patent was granted.

From the beginning of Pfizer's 4429F application, the only *known* 6-deoxy-oxytetracycline was that of that produced by Lederle by the McCormick process, i.e., the McCormick compound, (140) and its preparation by the hydrogenolysis of oxytetracycline was disclosed in a number of publications, including the above Belgian Patent. (141) The Belgian Patent did not disclose or teach how to make Pfizer's doxycycline. The diagram of the Belgian Patent did not purport to teach the actual orientation in space of the various substituents. To repeat, it reported only what Lederle's chemists thought was the *relative* stereochemistry, the absolute stereo configuration being then unknown. (142)

The Belgian diagram, as analyzed by Pfizer's chemists and Oglesby, was ambiguous as to the orientation of the 4 dimethylamino group relative to the orientation of any other substituent at any other asymmetric carbon atom in any given compound. (143) Lederle's Dr. McCormick himself testified that the knowledge of the 4 position stereochemistry was in a state of flux prior to Dobrynin's publication. (144) The McCormick Belgian Patent permits the choice of either one of two possibilities for the orientation of the substituents at the 4 position in the McCormick compound. (145) It is therefore impossible to determine from the Belgian diagram

whether the 4-dimethylamino group in the McCormick compound is *cis* or *trans* to the 4a and 5a hydrogens. (146) IR's expert, Professor Mitscher, interpreted the Belgian diagram as containing errors at the 4-, 5-, and 6 positions and thus it did not actually depict either the 4 position stereochemistry of either doxycycline or the McCormick compound it was supposed to illustrate. (147) As far as is known, the 6-deoxy-5-hydroxy compound depicted in the Belgian diagram has never been made. (148)

On July 25, 1960 Takeuchi and Buerger published "The Crystal Structure of Terramycin Hydrochloride." (149) Takeuchi and Buerger set forth the correct *relative* stereochemistry of oxytetracycline with all asymmetric centers. Pfizer constructed a model on the basis of its publication which showed Pfizer's chemists that the 5-hydroxyl group is on the same side of the molecule (*cis* to) as the 4a and 5a hydrogen. (150) Thus, before PC 4429F was filed, Pfizer's chemists were satisfied that the configuration of the 5-hydroxyl in its doxycycline was the same as in oxytetracycline and the McCormick compound, and concluded (correctly) that the 5-hydroxyl group in doxycycline is *cis* to the 4a- and the 5a-hydrogens. (151) The diagram of the Belgian Patent portrays the 5-hydroxyl group as being on the opposite side of the plane of the molecule from (*trans* to) 4a and 5a hydrogen. (152) Pfizer therefore firmly believed prior to May 5, 1961 that the diagram in the Belgian Patent did *not*, even accidentally, depict doxycycline. Pfizer, therefore, did not regard the Belgian patent as a possible anticipation of doxycycline, even under the Examiners' von Bramer doctrine. (153)

The Takeuchi and Buerger publication showed nothing as to the relative stereochemistry at the 6th position in doxycycline because their publication was concerned with the relative stereochemistry of oxytetracycline, while the steps

of conversion of oxytetracycline to Pfizer's (alpha) doxycycline is made through the intermediate methacycline which has no 6 position asymmetry. (154) Therefore, Oglesby had valid reason to believe that when he filed PC 4429F, Pfizer's conclusions with respect to the 5 position stereochemistry, standing alone, was sufficient to preclude using the Belgian diagram as a von Bramer anticipation of doxycycline, regardless of the 6 position stereochemistry. (155) Pfizer's chemists and Oglesby believed that the Belgian Patent diagram had accidentally depicted the 6 position relative stereochemistry, but at the 5 position the diagram appeared to depict the reverse stereochemistry and thereby did not depict doxycycline. (156)

Correction of the Belgian Patent

IR has maintained that after the Takeuchi and Buerger 1960 publication Pfizer's scientists all agreed that the Belgian Patent diagram "required correcting to put the 4, 5, and 5a substituents on the same side of the molecule * * * down," as marked by the dotted line; that "all, including Woodward, agreed that Takeuchi 'corrected' the Belgian Patent diagram, and that using the dotted line * * * down and solid line * * * up convention, the Belgian Patent's first diagram on page 3 as so corrected depicted doxycycline." IR then maintains that because Pfizer did not advise the Patent Office of the way the Belgian Patent should be corrected, "Pfizer failed to satisfy its fiduciary duty of full disclosure and absolute candor."

Belgian diagram

IR's argument is, legally, without merit. A prior art publication cannot be modified by the knowledge of those skilled in the art for purposes of anticipation.[30] As the Ninth Circuit Court of Appeals stated in Saf-Gard Products, Inc., supra, "anticipation is strictly a technical defense. Unless all of the same elements are found in exactly the same situation and united in the same way to perform the same identical functions in a single prior art reference, there is no anticipation." (157) Long before that, Carson v. American Smelting and Refining Company, 4 F.2d 463 (9th Circuit), cert. denied, 269 U.S. 555 (1925), held: "A foreign patent is to be measured as anticipatory not by what might have been made out of it but by what is clearly and definitely expressed in it."[31] The information conveyed by prior art is crystallized as of the date it is made public and the crystals cannot be corrected or altered to convey information or facts *later* acquired by others skilled in the art. In Badische Anilin & Soda Fabrik v. Kalle & Co., 94 F. 163 (S.D.N.Y. 1899), aff'd. 104 F. 802 (2d Cir. 1900) the court held:

> If the alleged anticipating matter leaves the description incomplete requiring extrinsic investigation to make it complete, it fails as anticipation * * * [T]he question is what does the prior publication say? Not what it might have said or what it should have said * * * if it fails to show the invention which it is said to anticipate, the contention that its author knew enough to write an anticipation and intended to do so is grotesquely irrelevant.[32]

Unless the Belgian diagram were established, without question, to depict doxycycline, it would not be a good

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[30]U.S.C. 102; In re Marshall, 578 F.2d 301, 198 USPQ 344 (C.C.P.A. 1978).

[31]4 F.2d 465.

[32]P. 168.

reference even though one skilled in the art, from the Takeuchi and Buerger publication, could determine that the Belgian diagram contained an error at the 5 position. (158)

As IR itself points out (159) Pfizer's original PC 4429F application claimed only the 6-epi-6-deoxy-5-*oxytetracyclines*, i.e., the doxycycline series. Oglesby deliberately did not claim the new epimer of the *tetracycline* series for the specific purpose of avoiding any von Bramer problem which might arise out of the Belgian diagram. These tetracycline compounds have no asymmetry at the 5 position, therefore the incorrect assignment of stereochemical orientation of the 5 position in the Belgian Patent diagram was not pertinent. In the tetracycline series, both 5 position substituents are identical. (160) It was not until after the von Bramer Doctrine had been overturned by In Re LeGrice[33] and In Re Brown[34] that Pfizer added claims to the new epimers of the tetracycline series. (161)

It must be again noted that the Patent Office was made fully aware of the Belgian Patent. At the first interview of March 29, 1962 Oglesby gave Examiner Adams a copy of the Belgian Patent and told him that Pfizer did not believe the diagram correctly depicted the 6 methyl stereochemistry of the McCormick compound. He further informed Adams that Pfizer believed the diagram was incorrect with respect to the orientation of the 5 hydroxyl group and that it did not therefore depict doxycycline. (162) Nevertheless, on October 30, 1962 Examiner Berg in the second Office Action cited the Belgian Patent with the proposition that doxycycline was thereby anticipated. (163) At the next interview, on March 6, Oglesby informed the then Examiner, Berg, that while Pfizer had previously determined that the 5 hy-

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[33]See Note W, supra.
[34]See Note II, infra.

droxyl group in its 4429F compounds differed from the orientation showed in the Belgian diagram, the orientation of that group had now been questioned in the Muxfeldt publication. (1964)

After Oglesby found In Re LeGrice, supra, in March 1963, on April 30, 1963 Pfizer amended its claims to include the 6-deoxy tetracycline derivatives arguing, as shown in the file wrapper, that LeGrice had overruled von Bramer. (165) Even this, however, did not end Pfizer's problems because Oglesby was uncertain until after In Re Brown, 329 F.2d 1006, 141 USPQ 245 (C.C.P.A. June 2, 1964) had been decided as to whether the Patent Office would give up its von Bramer policy.[35] Oglesby fully discussed the von

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[35]It was not until the Application of Brown, 329 F.2d 1006, 141 USPQ 245 (C.C.P.A. June 2, 1964) that the Patent Office's application of its "von Bramer doctrine" was specifically overturned. In Brown, the Clarke reference stated that "Attempts to prepare fluorine containing silicone homopolymers have been unsuccessful." Under their construction of von Bramer the Examiners rejected Brown's claims for a homopolymer of a perfluoralkylsiloxane because by the above statement Clarke had "suggested" a homopolymer within the scope of the language of his claims.

The Brown court said of the von Bramer doctrine:

> This doctrine * * * seems over a period of years to have been tailored in some quarters to a principle which defeats the novelty of a chemical compound on the basis of a mere printed conception or a mere printed contemplation of a chemical "compound" irrespective of the fact that the so-called "compound" described in the reference is not in existence or that there is no process shown in the reference for preparing the compound, or that there is no process known to a person having ordinary skill in the relative art for preparing the compound. In other words, a mere formula or a mere sequence of letters which constitute the designation of a "compound" is considered adequate [by the patent Examiners] to show that a "compound" in an application * * * designated by the same formula or the same sequence of letters is old * * * We do not think that the von Bramer case should be so construed * * *".

The Brown court concluded:

> To the extent that anyone may draw an inference from the von Bramer case that the *mere* printed conception or the *mere* printed contemplation which constitutes the designation of a "compound" is sufficient to show that such a compound is old, regardless of whether the compound is involved in a 35 U.S.C.

Bramer question with Examiner Modance in his July 9, 1964 interview. (166)

On January 19, 1965 Examiner Adams, who had returned to the Patent Office and had been reassigned the Pfizer application, issued an Office Action which no longer asserted the von Bramer rejection which Examiner Berg had raised. (167) As Adams testified, in view of the 1962 LeGrice decision he did not believe that the Belgian Patent provided a basis for a von Bramer rejection of Pfizer's compound because there was no enabling disclosure in that prior art. (168) Adams also testified that he could not properly have maintained the rejection based on von Bramer even before LeGrice because he could not have established that doxycycline was "generally capable of synthesis by the recognized classical organic reactions" as required by the von Bramer doctrine. (169) Pfizer's doxycycline was not identically disclosed or anticipated by the Belgian Patent. Even the 6 epimers of the tetracycline series which, as indicated above, Pfizer included in its claims after April 30, 1963 were not anticipated by the Belgian Patent, because, among other reasons, that patent did not set forth any enabling disclosure for their method of preparation.

IR has failed to meet its burden of proving that Pfizer was guilty of "fraudulent and inequitable conduct" in its handling of the Belgian Patent diagram during the prosecution of its patent application or that Pfizer "failed to satisfy its fiduciary duty of full disclosure and absolute candor" in respect thereto." (170)

VI. The EPI Nomenclature

Pfizer's doxycycline application stated that doxycycline is the 6-epimer of 6-deoxy-5-oxytetracycline and named it "6-epi-6-deoxy-5-oxytetracycline":

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§102 or a 35 U.S.C. §103 rejection, we totally disagree * * * [W]e think that the true test of any prior art relied on to show or suggest that a chemical compound is old, is whether the prior art is such as to place the disclosed "compound" in the possession of the public * * *" (citing Application of LeGrice).

> These new tetracyclines possess a definite microbiological activity against a variety of Gram-positive and Gram-negative microorganisms and are appropriately designated as 6-epi-6-deoxytetracyclines since the steric configuration of the 6-methyl group is opposite to that of the known 6-deoxytetracyclines. Thus the nomenclature "6-epi" as employed herein, is completely analogous to the accepted nomenclature for naming the known 4-epitetracyclines in that it refers to a steric configuration which is opposite to that of the previously known isomer. (171)

IR maintains that Pfizer's nomenclature deliberately and intentionally misrepresented the stereochemistry of doxycycline so as to create a false analogy. IR maintains that the prior known 4- and 5a- epi tetracyclines have the opposite stereochemical configuration from their fermentation-produced parents in their 4- and 5a- positions respectively, and the use of the name of "6-epi-6-deoxytetracycline" was devised to convince the Patent Office that doxycycline had the opposite, i.e., "unnatural" configuration at the 6 position from fermentation-produced tetracyclines, e.g., oxytetracycline.

As this court views it, Pfizer, in its file application, was saying that the prefix "6-epi" meant that the new compounds have the opposite configuration at the 6 position from that of the *known* 6-deoxy tetracyclines. The name 6-epi-6-deoxy-oxytetracycline set forth the relationship of doxycycline to the *prior known* 6-deoxy-oxytetracycline, i.e., the McCormick compound and differentiated doxycycline from all other compounds.

Again it must be stated that at the time PC 4429F was filed the *absolute* stereochemistry of the tetracyclines had *not* yet been established. The orientation at the 6 position in doxycycline was argumentative or speculative. (172)

Rather than speculate, therefore, even though Pfizer's belief had approached the level of almost certainty, Pfizer defined doxycycline as the 6 epimer of the known prior art form — the McCormick compound.

As discussed in Section V, supra, in the blissfulness of its unconfirmed belief, Lederle's Dr. McCormick had included a stereochemical diagram in his 1958 Belgian Patent. As indicated heretofore, McCormick's beliefs proved to be erroneous. Since the absolute stereochemistry was then unknown, Pfizer, not unnaturally, did not wish to make a similar mistake and Pfizer's Dr. Frost wrote to Oglesby on March 7, 1961: "Since the actual stereochemical formula of the 6 epi products is not known, we feel it best to omit formulas and refer to the products by name only." (173)

Gilman's Organic Chemistry (7th printing November *1950*) states that the first member of the epimeric pair to be isolated or synthesized is regarded as having a normal structure, while the second is described as an epi "modification." (174) Pfizer's use of the 6-epi nomenclature thus followed Gilman's definition. Also, IR's own expert, Professor Mitscher, who worked in Lederle's Dr. Kushner's department, still employs epi terminology in his own tetracycline publications exactly in the manner it was used in the doxycycline application. (175) Professor Mitscher testified that he understood that Pfizer's use of the term in the application expressed the stereochemical information which was then established and he agreed that Pfizer's nomenclature conformed to the way in which he and other chemists employ epi terminology. (176)

IR correctly points out that when PC 4429F was filed Pfizer's Drs. Blackwood, Rennhard, Stephens, Beereboom, and Von Schach were using the term alpha/beta in reference to the 6-deoxy tetracyclines, yet Dr. Blackwood's December notebook record of the first preparation and recognition of

6-epi-6-deoxy-tetracycline states: "Clearly this is the 6 epimer of the known 6-DOTC (6-deoxy-tetracycline)." (177) As IR indicated many times before, Pfizer's chemists were convinced that they had a better knowledge of the stereochemical configuration of the tetracycline molecule than any others skilled in the art, yet at that time not even they could be absolutely sure that they were right.

At the time the application was filed, Cyanamid's Dr. McCormick was certain that *his* compound had the "natural" configuration at the 6 position, i.e., that it contained the "alpha" or "natural" isomer at the 6 position. There is nothing in the file wrapper to indicate that Oglesby intended the Examiner to believe that Pfizer's doxycycline was the unnatural epimer. The state of the art at that time did not permit Pfizer to state with absolute certainty that its doxycycline was the natural, i.e., alpha, and McCormick's compound was the unnatural, i.e., beta, at the 6 position. All that Oglesby could state with absolute certainty and honesty in the PC 4429F was that the 6 "steric configuration of the 6 methyl group [of Pfizer's new compound] is opposite to that of the known 6-deoxy tetracyclines."

IR's prolonged argument that "before the doxycycline application was filed tetracycline chemists equated both unnatural configuration and inferior antibacterial activity with the epi tetracyclines" is confounded on its face by the fact that Lederle sought and was granted a patent on the McCormick compound, which actually contained the "unnatural" 6 epimer, with part of the claim for patentability being its superior antibacterial activity, a claim implementing the erroneous belief that it had the "natural" configuration. This court can find nothing in the record to substantiate IR's claim that Pfizer's use of the term "epi" at the time PC 4429F was filed was done with the intention to deliberately mislead the Patent Office.

In the first Official Action of October 26, 1961 Examiner Adams contended that "the discovery of the 6-epimer appears to be but routine development in the art" since epimerization of tetracycline-type antibiotics is well known, 4- and 5a-epimers having been disclosed in the art. (178) Pfizer responded to that reaction in its amendment of April 25, 1962 (still before Dobrynin's publication), pointing out that there were 64 mathematical possibilities for varying the prior art McCormick compound, therefore doxycycline could not be considered obvious. Pfizer also filed affidavits by its Drs. English and McBride setting forth the antimicrobial activity of Pfizer's doxycycline and Lederle's corresponding 6 epimer both in vitro and in vivo, stating: "There affidavits demonstrate the outstanding in vivo and in vitro activities of 6-epi-6-deoxy-5-oxytetracycline as contrased (sic) with the prior art 6 deoxy-5-oxytetracycline compound." (179) Nowhere in that April 25, 1962 amendment did Pfizer make any reference to any "natural" or "unnatural" configuration or to any theory that an "unnatural" epimer would be expected to be inferior to an epimer of "natural" configuration.

Because Pfizer stated in that response, "The prior art 6-deoxy-5-oxytetracycline [of normal as opposed to epimeric configuration] is * * * disclosed in Blackwood's and Stephens, et al.'s references of record, (180) IR contends that the term 'normal' was intended to incorrectly inform the Examiner that the prior art compound was of 'natural' configuration." This court notes that the term "normal" was employed in the file wrapper as well as in the internal correspondence predating the application (181) in exactly the manner set forth in the Gilman text, i.e., to refer to the first discovered member of an epimer pair. This court cannot see that it in any way inferred "fermentation-produced" or "natural" stereochemical configuration. Adams testified

that he understood the term "normal" as used in the file wrapper to refer to the known 6-deoxytetracyclines and did not construe it to mean that they had the same configuration as the fermentation-produced tetracyclines. (182)

After the 1962 Dobrynin publication had established that the 6-methyl group is "down" in fermentation-produced tetracyclines and the 1962 Muxfeldt publication showed that such orientation was reversed (and thus "up") in the products of the prior art hydrogenolysis, i.e., Lederle's McCormick Patent, Pfizer reported the relationship between its new compounds and the fermentation-produced tetracyclines in its amendment of April 30, 1963. both Dobrynin's and Muxfeldt's publications were included in the file wrapper. (183) IR's Professor Mitscher testified that pages 70-71 of the file wrapper made it clear to him that the 6-methyl group in Pfizer's claimed 6-epi compounds is oriented in the same manner as the 6-methyl group in the corresponding fermentation-produced compounds.

Adams testified that he must have read Pfizer's explanation of Dobrynin's publication contained on page 70 of the file wrapper, as well as some of the Muxfeldt publication during the prosecution. He stated that he understood that the orientation of the 6-methyl group undergoes reversal when previously known 6-deoxy tetracyclines are prepared by catalytic hydrogenolysis, (184) and understood that the orientation of the 6-methyl group in Pfizer's 6-epi compounds is the same as in the fermentation-produced compounds and thus is "natural". (185)

Adams was away from the Patent Office for about two years but upon his return, by Office Action of January 19, 1965 he rejected Pfizer's claims 9-16 and 18-21 as "failing to define the invention in the precise manner required by 35 U.S.C. 112," viz., that Pfizer did not positively identify the claimed compounds with regard to all points of epi-

merization. He also rejected the same claims as unpatentable over prior art references "wherein are claimed compounds which vary from the instantly claimed compounds only as spatial isomers" and rejected claims 9-11 and 18-19 as unpatentable over the Belgian Patent (I or II) or McCormick, et al. (III) on the basis that the compound shown by those patents vary "only as spatial isomers" from Pfizer's compound. (186)

Examiner Adams erroneously remarked that the 6-methyl group in doxycycline is oriented differently from that of the fermentation-produced compounds. Pfizer's amendment of March 5, 1965 drew the Examiner's attention to this error. (187) Adams testified that Pfizer's correction of his error made it clear that the 6 methyl group in doxycycline has the same spatial orientation as fermentation-produced tetracyclines and concluded that he had no reason to believe that Pfizer in any way mislead him concerning whether or not the orientation as substituents at the 6 position in Pfizer's claimed compounds were in the natural or unnatural position. (188)

IR's Professor Mitscher testified that from pp. 100-101 of the file wrapper (189) it is clear that the 6 methyl group in the claimed 6-epi compounds has the same orientation as the 6-methyl group in the corresponding fermentation-produced compounds, and that one skilled in the art in 1965 would have reached the same conclusion. (190)

In responding to Adams' "obviousness" rejection (supra) Pfizer did not refer to "natural" and "unnatural" compounds but argued that the mere substituent manipulation would not obviously be expected to provide the antibiotic advantages shown by doxycycline. (191)

In its March 5, 1965 amendment, at the request of the Examiner, Pfizer substituted "alpha" for the "6-epi" ter-

minology stating, "It will be understood that 6-epi and alpha are used interchangeably hereafter to refer to the identical compound." (192) Although IR contends that substitutions of the alpha nomenclature was improper, Examiner Adams stated, "All alpha meant to me was it was being substituted for epi to avoid confusion. It had no specific meaning beyond that." (193) Examiner Adams testified:

> Question. In determining the patentability at the time you passed the application to issue, did it make any difference to you whether the orientation of the substituents at the 6 position in the claimed compounds were the same or different from the orientation * * * in the tetracyclines produced by fermentation?
>
> Answer: No. (194)

IR has not sustained its burden of proving that Pfizer used the term "epi" with the intent of misleading the Patent Office in any way and has failed to meet its burden of showing what Pfizer did in connection therewith in any way actually misled the Patent Office or that Pfizer failed to deal with the Patent Office with absolute candor.

VII. Antibacterial Activity of Doxycycline

While it is now known that doxycycline is a superior broad spectrum antibiotic exhibiting a wide order of antibacterial activity against a wide range of disease-causing microorganisms,[36] nevertheless IR maintains that Pfizer fraudulently misrepresented the antibacterial activity of doxycycline. It is IR's position that, in documenting the superior activity of doxycycline. It is IR's "position that, in documenting the superior activity of doxycycline as compared with the McCormick compound, Pfizer deliberately exaggerated doxycycline's antibacterial activity in every con-

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[36]See "Background", pages 1-2.

ceivable way, thereby precluding the patent examiners from fairly evaluating the relative activities of the respective compounds." (195) IR further maintains that these exaggerations were deliberately aimed at forging "the chain binding the examiners to Pfizer's non-obviousness argument." (196) IR points out that during the prosecution Pfizer "harped upon the substantial 'differences in properties', (197) the 'differences in kind', (198) and the 'differences of approximately 36-fold' ". (199)

The file wraper shows that Examiner Berg in 1962 had withdrawn his prior rejection of Pfizer's claims upon receipt of the English and McBride affidavits concerning the antibacterial activity of doxycycline stating that the affidavits "had been carefully considered and are deemed persuasive in overcoming the rejection." (200)

Even though the file wrapper on its face negates IR's claim that the patent Examiners were deliberately misled by the English and McBride affidavits of antibacterial activity into granting Pfizer's claims, IR insists that Pfizer fraudulently exaggerated and magnified the "showing of antibacterial activity in an effort to dramatize its claim of unexpected and unobvious advantage." (201) The focal point of IR's attack is its claim that by disclosing that doxycycline was active in vitro against staph 400, thereby Pfizer suggested its possible activity in vivo against strains that were resistant to tetracycline. IR claims that by simultaneously withholding doxycycline's inactivity in vivo against staph 400, then and thereby Pfizer misrepresented doxycycline's antibacterial activity.

Pfizer's Dr. Von Schach stated that Pfizer's scientists regarded the demonstration of in vitro activity of a prospective antibacterial compound as indicating the possibility of in vivo activity. (202) Dr. English testified that he believed that an indication of in vitro activity against the

tetracycline resistant strain warranted further work to determine whether the compound additionally exhibited in vivo activity against the same strain. (203) Pfizer's scientists tested doxycycline against staph 400. IR's thesis is that since Pfizer's scientists found, and it was so reported to the Examiner, that doxycycline showed activity against staph 400 in vitro, while Pfizer's report to the Patent Office did *not* state that its tests in vivo had *not* shown antibacterial activity, ergo Pfizer deliberately misled the Examiners into inferring that it was in fact potentially active in vivo. Although IR's argument has an abstract plausibility, nowhere in the record is there any indication that any of the Examiners, inferentially or otherwise, were led to believe that doxycycline was active in vivo against staph 400. The English and McBride affidavits were filed to compare the activity of doxycycline with that of the prior art McCormick compound. The McCormick compound had not been tested against staph 400 in vivo. (204) Nowhere in the record is there any representation that doxycycline was active in vivo in each and every microorganism against which it manifested an in vitro activity.

On the record, this court agrees with Dr. English: "There is no reason to believe, based on an MIC that a compound will have activity in vivo." (205) Dr. Woodward, when asked whether in vivo activity necessarily follows from in vitro activity, said: "Good Lord, no; I wish it did." (206)

In response to a question as to whether it was his understanding during the prosecution of the doxycycline patent that an antibiotic compound displaying substantial in vitro activity against a particular microorganism was necessarily active in vivo against the same microorganism, Adams answered: "My understanding was that you could not [necessarily] predict activity from any in vitro activities * * *" and continued to state that in passing the doxycycline

patent to issue, he did not make any assumption whatsoever that doxycycline was active in vivo against each and every microorganism against which it displayed in vitro activity. Moreover, Examiner Adams gave this testimony:

> Question: Now if you had been specifically informed that doxycycline was inactive in vivo against that same staph 400, would it have made any difference to you in your decision to allow the product claims in this case?
>
> Answer: No, it would not have made any difference. (207)

In IR's Dr. Mitscher's patent application on 5a. 6- anhydrotetracyclines filed in February of 1964 and issued in 1966 states: "The novel compounds of the present invention are useful as antibacterial agents since they are biologically active and possess broad spectrum antibacterial activity." The application then represents the in vitro activity (MIC values) of several of the compounds. (208) Dr. Mitscher testified that the compounds claimed in the application had no significant in vivo activity. (209) Nowhere in Dr. Mitscher's patent application or its file wrapper is that fact disclosed.

IR admits that doxycycline "had superior in vitro antibacterial activity than the prior art (McCormick) compound" and that "doxycycline had greater antibacterial activity than the McCormick compound." (210) This court has carefully reviewed the file wrapper (211) and all of the representations made therein regarding the antibacterial activity of doxycycline, as well as the testimony relating thereto, and finds that Dr. English's affidavit did not exaggerate actually or inferentially the antibacterial activity of doxycycline in vitro. (212) This court has also again reviewed the affidavit of Dr. McBride (213) directed to doxycycline's in vivo activity, as well as the testimony

regarding the same (214) and finds that while MIC values, like other biological measurements, are subject to some variation and thus not precisely reproduceable, they provide those skilled in the art with highly valuable information particularly for comparative purposes. (215) The McBride test demonstrated that doxycycline is a much more active antiobiotic than the McCormick compound. Dr. English's 1964 test, made for the purpose of presenting Pfizer's claims to the F.D.A., did not use the same controls as Dr. McBride, but instead, Dr. English's 1964 test involved staph 5 mp (mouse-passed) and multiple dosing. (216) The purpose of mouse-passing is to render the culture more virilent and generally a higher dose of antibiotic is required to inhibit infection. Thus, Dr. English's data based on mouse-passed cultures is not valid comparison with data derived from non mouse-passed cultures. (217) Both Dr. McBride's 1961 test and Dr. English's 1964 test demonstrate that doxycycline is in fact vastly superior to the McCormick compound both in vitro and in vivo.

If more were needed to indicate that IR has failed to carry out its burden of proof, Examiner Adams testified that he did not rely on the affidavits of either English or McBride in deciding to issue the patent:

> With LeGrice and Brown, the requirement for a reference was it had to be enabling. There was no reference known to me * * * which taught how to make the 6-epi 6-deoxy tetracyclines * * * [therefore] they were unobvious * * * There was no prima facie case of obviousness and therefore no requirement for the applicant to show superiority over any known compounds.

Adams also testified that a showing that doxycyycline was 8 to 10 times more active than the McCormick compound

would have been more than sufficient to establish non-obviousness. (219)

IR has failed to fulfill its burden of proving that Pfizer's actions in any way fraudulently misrepresented the antibacterial activity of doxycycline or that Pfizer failed to fulfill its duty of full disclosure and absolute candor to the Examiners.

VIII. Inventorship

The evidence is uncontradicted that the research group responsible for the discovery of methacycline was Dr. Charles R. Stephens, Jr., as leader, with Drs. John J. Beereboom, Robert Blackwood, and Hans H. Rennhard as his assistants. This research team worked in laboratories close to each other, had frequent meetings and consultations, and exchanged ideas and findings. (220) It was Dr. Stephens' underlying idea that if 11a-halo derivatives of oxytetracycline and tetracycline could be prepared they might possibly be converted to 11a-halo-5a, 6 anhydrotetracyclines and that these latter might be reduced to the known 6-deoxytetracyclines. (221) In following out Dr. Stephens' concept, Dr. Rennhard prepared 11a fluoro tetracyclines which were found to be 6, 12-hemiketals. Dr. Beereboom prepared 11a chloro derivatives and Dr. Blackwood isolated 11a chloro hemiketals. The first stage tetracycline hemiketal intermediates had never been known or prepared by anyone before they were first made by this Pfizer group. In continuing the experiments, Drs. Blackwood, Rennhard and Beereboom each contributed methodology and techniques and what ultimately resulted in the production of 6 methylene tetracycline. The second stage intermediates produced by the group proved to be 11a-halo-6-methylene tetracyclines, (222) and this was so recorded by Dr. Stephens. (223) The same techniques and reactions

were applied to oxytetracycline, which led to the formation of 6-methylene-5-oxytetracycline, which is also known as methacycline, a widely known antibiotic.

The methacycline patent, U.S. 2,984,686, shows that it is the invention of Drs. Blackwood. Rennhard, Beereboom and Stephens. These four were responsible for the conception that the second stage intermediates they had prepared could be reduced to the 6 epimer of 6-deoxy tetracycline. The absolute structure of the intermediates was unknown but it was discussed in late April 1960 by the four, along with Dr. Buchi and Dr. Von Schach, and the consensus hypothesis was that the second stage intermediates were 11a-halo-6-methylene tetracyclines and the four's original conceptions. The records do not indicate anything that occurred during that meeting to change the prior belief of the four that the second stage intermediates could be reduced to the 6 epimer of 6-deoxy tetracycline by their own developed methods of hydrogenation. (224)

Thereafter, Drs. Beereboom and Blackwood of Stephens' team prepared 7, 11a-dichloro-6-methylene-5-oxytetracycline and converted it to 7-chloro-6-methylene-5-oxytetracycline under the guidance of Dr. Stephens. Dr. Stephens testified that it was the four who determined that doxycycline was formed upon catalytic hydrogenation of the 6 methylene and 11a-halo-6-methylene oxytetracyclines. (225) Dr. Beereboom was the first to actually make and postulate that he had produced the sought-for 6 epimer, which he prepared on November 3, 1960 by the catalytic hydrogenation of methacycline. This was recorded in his notebook on November 18, 1960. Dr. Beereboom's November 16, 1960 monthly report which referred to his ongoing experiment mistakenly referred to rhodium as the catalyst rather than palladium. This was subsequently corrected by hand, but the error carried over into Dr. Beereboom's December 19,

1960 report as referring to rhodium as the catalyst. (226) Alpha 6-deoxy tetracycline, another product claimed in the patent at issue, was first prepared by Dr. Blackwood by zinc reduction of an 11a-fluoro-6-deoxy tetracycline made by Dr. Rennhard. (227)

The record is clear that Dr. Beereboom made and postulated the identity of doxycycline before Dr. Von Schach. (228) There is no question that Dr. Von Schach did contribute to the techniques necessary to produce doxycycline but he did not join Dr. Stephens' team group until about June 20, 1960, which was after the discovery of the 6-methylene tetracyclines and after the possibility that both 6-deoxy epimers could be made from the hydrogenation of the 6-methylene tetracyclines had already been discussed by Dr. Stephens' group of four. (229) The work conducted by Dr. Von Schach was pursuant to specific assignments carried out under Dr. Stephens' direction. (230)

The parent application in the PC 4429 series was filed on May 23, 1960 in the names of Drs. Blackwood, Rennhard, Beereboom, and Stephens. In that application, the hydrogenation process by which doxycycline was made and which is the subject of process claims 1-8 of the doxycycline patent are disclosed. (231)

As the March 7, 1961 letter from Dr. Frost of Pfizer's Patent Department to Oglesby shows, Frost suggested that two patent applications be made, one directed to the product doxycycline, and the other for its preparation by hydrogenation of the 6-methylene tetracyclines. This letter was to be a c.i.p. of the then pending application PC 4429 which, as above stated, disclosed the process. (Dr. Frost proposed that the product application should be made a c.i.p. of application 3597A, the Stephens-Conover application which has been fully discussed heretofore under Section IV — "Coproduction" because of Stephens' "speculation" that he

had possibly produced doxycycline.) (232) Following Dr. Frost's letter, Oglesby conferred with Dr. Stephens. Oglesby told Dr. Stephens that if Pfizer were to claim doxycycline in the 3597 series, the procedures would be restricted to the oxytetracycline hydrogenolysis disclosed in the 3597 series and which had brought about Stephens' "speculation" regarding the 6 epimers. (233) Stephens advised Oglesby that the only process which would, with certainty, produce doxycycline was that involving the hydrogenation of methacycline. (234) Oglesby then reached the conclusion that the true inventors of doxycycline, perforce, were the inventors of the 4429 series application, viz. Drs. Blackwood, Rennhard, Beereboom, and Stephens, whose work, as above indicated, led to its isolation and identification, (235) and so the present application was filed.

This court finds no tangible evidence to sustain the claim that Oglesby's decision as to the inventorship of doxycycline was motivated by a desire on Oglesby's part to conceal the speculation found in the PC 3597A and C applications. Examiner Adams examined the 3597A and C cases during his handling of the doxycycline application. He even issued an action in PC 3597A on October 4, 1961, just a few weeks before he issued his first action in the doxycycline case. (236)

It is noted that IR does not challenge the fact that Drs. Stephens. Beereboom, Rennhard and Blackwood were the inventors of methacycline. As indicated in the discussion of IR's claim of "obviousness", IR maintained that doxycycline was "obvious" after methacycline. Thus, on IR's own logic, the four were, ipso facto, the "obvious" inventors of the "obvious" doxycycline. This court agrees with Mr. Oglesby that the first inventors of doxycycline "were obviously the inventors of the PC 4429 series since it was the work in this series which first isolated the 6 epi

compound, identified the same, and determined the proper utility." (237) Those were Drs. Blackwood, Rennhard, Beereboom and Stephens.

As pointed out in Deller's Walker on Patents, 2d Ed. §42, where an infringer claims that a person named in the patent as an inventor was not such: "This defense has always been regarded as technical and is looked upon with disfavor by the courts * * * and clear and convincing proof is required to sustain it." The cases involving joint inventorship illustrate that the exact lines between invention and non-invention by co-inventors is very difficult to define. As Judge Holzoff stated in Monsanto Co. v. Kamp, 269 F.Supp. 818, 154 USPQ 259 (D.D.C. 1967):

> [A] joint invention is the product of collaboration of the inventive endeavors of two or more persons working towards the same end and producing an invention by their aggregate efforts * * * [I]t is not necessary that the entire inventive concept should occur to each of the joint inventors or that the two should physically work on the project together * * * the fact that each of the inventors plays a different role and the contribution of one may not be as great as another may not detract that the invention is joint if each makes some original contribution though partial to the final solution of the problem * * *.

See also Delaski & Thropp Circular-Woven Tire Company v. Wm. R. Thropp & Sons, 218 F. 458 (D.N.J. 1914), aff'd. 226 F. 941 (3rd Cir. 1915) as compared with Agawam Woolen Co. v. Jordan, 74 (Wall) U.S. 583 (1869).

IR has not met its burden of proving by "clear, unequivocal and convincing evidence that Pfizer intentionally named false inventors of doxycycline.

IX. Alleged Double Patenting

The last of IR's contentions for consideration is that the doxycycline patent claims are invalid for double patenting over the claims of Pfizer's methacycline patent.

Among the foundations for IR's claim is Dr. Frost's letter of March 7, 1961 to Oglesby. (238) While the letter starts out in such a manner that it could not unreasonably be construed as a directive to Oglesby to prepare for filing "PC 3597D directed to the 6-epi-6-deoxy-5-oxy tetracyclines; PC 4429F directed to a process for making 6-epi-6-deoxy tetracycline," a careful reading of the letter indicates that Frost was simply making proposals of lines of procedure which Oglesby might follow. Immediately following the above quotation Dr. Frost analyzes the factual and legal problems involved in the "directives" contained in the first paragraph, and on page 2 in paragraphs 2 and 3 we see the "iffy" problems confronting Dr. Frost, and in paragraph 3, sentence 2, we find: "On the other hand will we encounter any difficulties during prosecution if the application discloses the 6-epi-6-deoxy derivatives of terramycin, tetracycline, and aureomycin and claims only the 6-epi-6-deoxy-5-oxytetracycline products?" a question clearly calling for the expertise of Oglesby.

That the letter must be construed as Dr. Frost's data analysis and proposals follows from the way in which Oglesby acted upon it. Manifestly, he did not consider it as a "directive" or "order" which he must unquestionably follow. As shown by his letter to Dr. Knuth of April 21, 1961 (239) he took all of Dr. Frost's data, secured more from Dr. Knuth, and then first telephonically advised Dr. Knuth of the patent procedure which should be followed and then proceeded to file the application for the patent now at issue.

IR's contention that Oglesby abandoned PC 3597 in order to prevent Cyanamid from claiming and winning priority on alpha 6-deoxy tetracyclines (240) is untenable. As clearly stated in the discussion on "obviousness", supra, Lederle never disclosed alpha 6-deoxy tetracycline or any process for making it, nor did it ever conceive of, disclose, make, or claim doxycycline in its patent application or chemical journal publications. There is no evidence to justify IR's claim "having wrestled with the issue of inherent coproduction in the prosecution of the 3597 series and the interference [Oglesby] was obviously not anxious for that issue to surface again in the doxycycline case," (241) just as there is no evidence to suggest that Oglesby's reasoning was, "[I]f Pfizer switched the product claims to the 4429 series Pfizer would have both inventorship and coproduction problems." (242)

It is manifest upon the face of each patent that the claims of the doxycycline patent do not define the same invention as the claims of the methacycline patent. The methacycline patent claims only certain 6-deoxy-6-demethyl-6-methylene-5-oxytetracycline compounds; no process claims are included. (243) The doxycycline patent claimed alpha-6-deoxy tetracyclines, including specifically alpha-6-deoxy-5-oxytetracycline and the method of producing such compounds. (244) The making or use of any of the claimed 6-methylene compounds would not infringe on any claim of the doxycycline patent and vice versa. Upon the expiration of the methacycline patent, methacycline can be produced and used without in any way infringing the doxycycline patent. As was said in Tractor Supply Co. v. International Harvester, Co., 155 USPQ 420, 424 (N.D. Ill. 1967), in such a situation there is no extension of the monopoly of the first of the two patents.

The differences between the methacycline patent and the doxycycline patent are much greater than those presented in In re Aldrich, 398 F.2d 855, 857, 158 USPQ 311, 312 (C.C.P.A. 1968) where the court reversed a double patenting rejection and stated, "Patent claims are looked to only to see what has been patented, the subject matter which has been protected, not for something one may find to be disclosed by reading them." Similar thereto was the decision in In re Sarett, 327 F.2d 1005, 140 USPQ 474 (C.C.P.A. 1964), wherein the court said, "We are not here concerned with what one skilled in the art would be aware from reading the claim but with what inventions the claims define."

This court has heretofore indicated that there is nothing in the methacycline patent which indicates that a new antibiotic, doxycycline, can be produced by the catalytic hydrogenation of methacycline. The two claimed inventions are clearly distinct and display fundamental chemical differences far exceeding the differences in the following cases in which the issue of double patenting was raised: In re Buehler, 515 F.2d 1134, 185 USPQ 781 (C.C.P.A. 1975); In re Wallace, 336 F.2d 786 (C.C.P.A. 1966); In re Maxwell, 188 F.2d 479, 89 USPQ 387 (C.C.P.A. 1951).

In the course of the processing of the doxycycline application, Examiner Adams issued two double-patent rejections. He did not base either of those rejections on the methacycline patent. It was during the year immediately preceding May 6, 1961, when the doxycycline application was filed, that Examiner Adams considered the methacycline application and issued a patent thereon on May 16, 1961. Thus, he was initially considering the doxycycline patent during a period when he was very familiar with all of the claims, as well as the chemistry involved in the methacycline patent. This fact reinforces the presumption

of validity attaching to the granting of the patent on doxycycline and the rejection of IR's claim of double patenting.[37]

As was said in Tractor Supply Co. Industries Inc. v. International Harvester Company, 406 F.2d 53, 57 (7th Cir. 1968): "It is well established that a defense of double patenting carries with it a heavy burden of proof and that all reasonable doubts must be resolved in favor of the validity of the challenged patent." IR has failed to sustain its burden of proving that the doxycycline patent is invalid because of double patenting.

Finale:

Pfizer's application for a patent on doxycycline did not have as quick and easy a trip through the Patent Office as that of its application for a patent on methacycline. The doxycycline patent was under consideration by the Patent Office for almost five years before a Notice of Allowance was mailed to Oglesby on April 9, 1965.

In its first Office Action of October 26, 1961 Examiners Marcus and Adams rejected Pfizer's key claims (9-16) in its application on the basis of prior art references: "no patentable distinction" from prior art, "discovery of the 6 epimer appears to be a routine development in the art," etc. In its second Office Action of October 30, 1962, Examiners Marcus and Berg rejected claims 9-11 on the basis of prior art references illustrating "in the structural formulas the 6 epi derivatives of the claimed compounds."

In its third Office Action of January 19, 1965, Examiners Rizzo and Adams rejected claims 9-16 and 18-21 (added

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[37]See Oglebay v. Universal Refractories Corp., 195 USPQ 569 (E.D. Wis. 1977); Ekstrom-Carlson & Co. v. Onsrud Machine Works Inc., 298 F.2d 765, 132 USPQ 224 (7th Cir. 1962).

by Pfizer's amendment of April 29, 1963) on the basis that the references of record varied from Pfizer's claimed compounds "*only as spatial isomers.*" Claims 9-11 and 18-19 were rejected over the McCormick and Belgian patents, it being the position of the Examiners that "these compounds vary *only as spatial isomers*" from Pfizer's compounds. "[T]hey are *more closely related* to [Pfizer's] compounds * * * than would be the adjacent homolog." Also stated again was that Pfizer's "claimed spatial isomer are [sic] obvious within * * * 35 U.S.C. 103." Claims 18, 19, and 21 "were rejected as unpatentable" over prior references of record because they differed from Pfizer's compounds "only in the spatial arrangement of the 6 methyl group." Claims 9-11, 13-15, 18, 19, and 21 were rejected under another reference of record which "disclosed the spatial isomers" of Pfizer's compounds, and the Examiners concluded: "The claimed compounds are deemed obvious in view of their known isomers."

As related in detail heretofore and as shown in the amendments filed by Oglesby, all as are disclosed in the file wrapper, (245) Oglesby successfully satisfied the Examiners that none of the grounds for their objections were legally and factually tenable; therefore, the patent was granted.

The file wrapper itself thus shows that IR's claims of invalidity on the grounds of obviousness, prior art coproduction, the Belgian Patent, the use of "epi", the antibacterial activity, all were considered and acted upon by the Patent Examiners before they allowed the patent.

A review of the file wrapper, along with Examiner Adams' affidavits and depositions, convinces this court that the intraoffice memoranda of Oglesby and the statements set forth in the amendments regarding the areas discussed accurately reflect what transpired between Oglesby and the Examiners.

There cannot be, nor has there been, any exact interpretation of the "duty of candor" owed by a patent applicant, as set out in Precision Instrument Manufacturing Co., supra. Although the defense that the patentee has failed to deal candidly with the Patent Office encompasses "inequitable conduct" which falls short of common law fraud and deceit, the judicial application of that defense has not been completely uniform in interpretation.

The 8th Circuit Court, in Pfizer Inc. v. International Rectifier Corp., supra, stated:

> It would be unwise to attempt to formulate a standard of conduct setting forth all elements of the defense embracing all misconduct before the Patent Office that might justify refusal to enforce a patent. However, we note that the standard is not one of strict liability for innocent or even negligent omissions or misstatements before the Patent Office. Rather, to result in refusal to enforce a patent, the misconduct must be accompanied by "some element of wrongfulness, willfulness, or bad faith" (a "willful act * * * which rightfully can be said to transgress equitable standards of conduct"). This requirement of proof has been uniformly applied in infringement actions by a majority of the circuits to claims of both fraud[13] and lesser inequitable conduct.[14] Moreover, proof of misconduct under either theory must be established by "clear, unequivocal and convincing" evidence. P. 186-7

In notes 13 and 14 the court cited:

> [13]Monsanto Co. v. Rohm & Haas Co., 456 F.2d 592, 598, 601 n. 14, 172 USPQ 323, 327, 329-330 (3d Cir.), cert. denied, 407 U.S. 934, 92 S.Ct. 2463, 32 L.Ed.2d 817, 174 USPQ 129 (1972); Kolene Corp. v. Motor City Metal Treating, Inc., 440 F.2d 77, 83, 169 USPQ 77, 81-82 (6th Cir.), cert. denied, 404 U.S. 886, 92 S.Ct. 203, 30 L.Ed.2d 169, 171 USPQ 325

(1971); Scott Paper Co. v. Fort Howard Paper Co., 432 F.2d 1198, 1204-05, 167 USPQ 4, 9-10 (7th Cir. 1970), cert. denied, 401 U.S. 913, 91 S.Ct. 882, 27 L.Ed.2d 812, 168 USPQ 609 (1971); Norton v. Curtiss, 433 F.2d 779, 793-95, 57 CCPA 1384, 167 USPQ 532, 543-544 (1970) (interference proceeding to challenge priority of invention and strike application for fraud); see Acme Precision Products, Inc. v. American Alloys Corp., 484 F.2d 1237, 1239-40, 179 USPQ 453, 453-454 (8th Cir. 1973) (infringement claim dismissed due to deliberate misrepresentations and patentee's knowledge of fraudulent procurement); Cataphote Corp. v. DeSoto Chemical Coatings, Inc., 450 F.2d 769, 772, 171 USPQ 736, 738-739 (9th Cir. 1971), cert. denied, 408 U.S. 929, 92 S.Ct. 2497, 33 L.Ed.2d 341, 174 USPQ 193 (1972) (antitrust counterclaim alleging fraud); Nashu Corp. v. RCA Corp., 431 F.2d 220, 227, 166 USPQ 449, 453-454 (1st Cir. 1970) (claim for refund of royalties due to fraud in procurement); Triumph Hosiery Mills, Inc. v. Alamance Industries, Inc., 299 F.2d 793, 796, 132 USPQ 414, 416 (4th Cir.), cert. denied, 370 U.S. 924, 82 S.Ct. 1566, 8 L.Ed.2d 504, 133 USPQ 702 (1962); Edward Valves, Inc. v. Cameron Iron Works, Inc., 286 F.2d 933, 947, 128 USPQ 307 modified on other grounds, 289 F.2d 355, 129 USPQ 131 (5th Cir.), cert. denied, 368 U.S. 833, 82 S.Ct. 55, 7 L.Ed.2d 34, 131 USPQ 498 (1961); Haloro, Inc. v. Owens-Corning Fiberglas Corp., 105 U.S. App. D.C. 320, 266 F.2d 918, 121 USPQ 339 (1959);

[14]Parker v. Motorola, Inc., supra at 535, 188 USPQ at 238-239; Schnadig Corp. v. Gaines Mfg. Co., 494 F.2d 383, 393, 181 USPQ 417, 424 (6th Cir. 1974); Monsanto Co. v. Rohm & Haas Co., 456 F.2d 592, 598, 601 n. 14,172 USPQ 323, 327, 329-330 n. 14 (3d Cir.), cert. denied, 407 U.S. 934, 92 S.Ct. 2463,

32 L.Ed.2d 817, 174 USPQ 129 (1972); Carter-Wallace, Inc. v. Davis-Edwards Pharmacal Corp., 443 F.2d 867, 882, 169 USPQ 625, 635-636 (2d Cir. 1971); Scott Paper Co. v. Fort Howard Paper Co., 432 F.2d 1198, 1204-05, 167 USPQ 4 (7th Cir. 1970), cert. denied, 401 U.S. 913, 91 S.Ct 882, 27 L.Ed.2d 812, 168 USPQ 609 (1971); see Haloro, Inc., v. Owens-Corning Fiberglas Corp., 105 U.S. App. D.C. 320, 266 F.2d 918, 121 USPQ 339 (1959); Norton v. Curtiss, 433 F.2d 779, 795-96, 57 CCPA 1384, 167 USPQ 532, 544-546 (1970). See also Iron Ore Co. v. Dow Chemical Co., 500 F.2d 189, 195, 182 USPQ 520, 524 (10th Cir. 1974); Carney, Misrepresentations Before the Patent Office; Antitrust and Other Legal Effects, 12 B.C. Ind. & Com.L.Rev. 1005 (1971).

In Norton, supra, the Court of Customs and Patent Appeals noted:

> We find that courts are generally applying equitable principles in evaluating the charges of misconduct alleged to be fraudulent * * * [I]n suits involving patents, today, the concept of "Fraud" on the patent office * * * encompasses not only * * * "technical" fraud, but also a wider range of "inequitable" conduct found to justify holding a patent unenforceable. The courts differ as to the conduct they will recognize as being sufficiently reprehensible so as to carry with it the consequences of "technical" fraud.

In attempting to define its concepts, the court said:

> [T]raditionally, the concept of "fraud * * * refer[s] to a type of conduct so reprehensible that it could alone form the basis of an actionable wrong * * * That narrow range of conduct, now frequently referred to as "technical" or "affirmative" fraud * * * is generally held *not* to exist unless the following indispensible elements are found to be present: (1) a representation of a material fact; (2) the falsity of that representation;

(3) the intent to deceive or, at least, a state of mind so reckless as to the consequences that it is held to be the equivalent of intent (scienter); (4) a justifiable reliance upon misrepresentation by the party deceived which induces him to act thereon, and (5) injury to the party received as a result of his reliance on the misrepresentation.

But the term "fraud" is also commonly used to define that conduct which may be regarded as a defense in an action at equity for the enforcement of a specific obligation. In this context, it is evident that the concept takes on a whole new scope * * * [F]ailure * * * to satisfy all the elements of the technical offense often will not necessarily result in a holding of "no fraud". Rather, the courts appear to look at the equities of the particular case and determine whether the conduct before them — which might have been admittedly less than fraudulent in the technical sense — was still so reprehensible as to justify the court's refusing to enforce the rights of the party guilty of such conduct * * * [I]n such instances the concept of fraud becomes intermingled with the equitable doctrine of "unclean hands". A court might still evaluate the evidence in light of the traditional elements of technical fraud, but will not include a broader range of conduct within each of those elements, giving consideration to the equities involved in the particular case. P. 792, 793.

In its application of the above concept, the court said:

It is our view that a proper interpretation of the "materiality" element of fraud in this context must include therein consideration of factors apart from the objective patentability of the claimed issue, particularly (where possible) the subjective considerations of the examiner and the applicant * * * [T]he state of mind of the one making the representations is probably the most important of the elements to be considered in

> determining the existence of "fraud". Perhaps it is most of all in the traditional element of "scienter" that the existence of a fiduciary-like duty should have its effect * * * [G]ood faith and subjective intent, while they are to be considered, should not *necessarily* be made controlling. Under ordinary circumstances, the *fact* of misrepresentation, coupled with proof that the party making it had knowledge of its falsity, is enough to warrant drawing the inference that there was a fraudulent intent. Where public policy demands a complete and accurate disclosure it may suffice to show nothing more than that the misrepresentations were made in an atmosphere of gross negligence as to their truth. P. 795-6
>
> [W]e must emphasize that while we have recognized that the requirement that the provisions of Rule 56 be interpreted more broadly in this area of inequitable conduct, the rule as to burden of proof has not changed * * * [T]he standard has been and still is that the proof of fraud must be clear and convincing. Thus, one asserting misconduct caarries a heavy burden of persuasion. P. 795-7.

A careful analysis of the cases cited under notes 13 and 14, supra, discloses that in six cases (plus one remand) where the patent was invalidated the patentee had knowingly misrepresented or failed to disclose some material fact which, if revealed to the Examiner, would have perforce caused a rejection of the patent application.[38]

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[38]For example: In Monsanto, supra, the court found that knowingly false statements were made to the Patent Office and material facts deliberately concealed that would otherwise have resulted in denial of the patent. In Beckman Instruments, supra, the court found that knowledge of the prior art was deliberately withheld and would have resulted in denial of the patent. And in Monolith Portland, supra, the court found a deliberate withholding of crucial information that would also have resulted in denial of the patent.

In the other six cases the courts gave great weight to the good faith disagreement by the applicant as to the materiality or pertinence of the undisclosed information or found that the acts of the applicant, even though negligent, did not reach the point of gross negligence.

Examiner Adams examined Pfizer's methacycline patent application, its doxycycline patent application, as well as Lederle's McCormick patent application on the known 6-deoxy tetracyclines. (246) Neither during his examination of the application nor in his subsequent depositions did he characterize Pfizer's representations or actions as having falsely misled him into his ultimate conclusion of patentability. The record is replete with indications that the representations made by Oglesby were made in good faith and not with the deliberate intent of misleading the Patent Office.

In its review of the multitude of cases cited by plaintiff and defendant, as well as the cases referred to in those cases, this court has found no precedent which on its facts would apparently mandate that the proven acts of Pfizer in *this* case should be construed as fraudulent or as violating the duty of candor as postulated by The Court in Precision Instrument, supra, or construed by the Court of Customs and Patent Appeals in Norton, supra.

Although this court noted that in one criminal case the 9th Circuit Court, after finding that in three particularized instances the lower court had committed no error on any one of them, nevertheless concluded that the totality of the acts complained of constituted error, this court can find no such synergistic effect arising from the totality of Pfizer's actions objected to by the defendant. IR has failed to carry its burden of proof that Pfizer committed fraud or engaged in inequitable conduct or had unclean hands in the prosecution of the patent in suit. It has failed to carry its burden

of proving that Pfizer misrepresented or concealed from the Patent Office any prior art, fact, or information material or pertinent to patentability. IR has failed to carry its burden of proving that Pfizer failed to exercise the degree of candor and good faith required by Precision Instrument Co., supra, or Norton, supra.

Pfizer's patent 3,200,149, is *valid*.

Plaintiff's counsel will prepare the partial judgment.

Appendix

1. IR 371
2. There is no dispute that hydrogenation of tetracyclines and methacyclines produced different compounds and this was well known to all Lederle and Pfizer chemists, i.e., to those "skilled in the art".
3. Blackwood Tr. p. 353-357
4. Woodward Tr. p. 1224, ll. 6-13
5. Woodward Tr. pp. 1409-10, 1424-26; 1438
6. von Schach Tr. p. 5478, l. 11 — p. 3479, l. 4.
7. Stephens Tr. p. 4124
8. Williams Dep. pp. 21-23; Mitscher Tr. pp. 4847-50
9. Mitscher Tr. pp. 4916-25; IR 83, 84; PX 89-90
10. U.S.V. Dep. Ex. 269
11. In re Lindell, 385 F.2d 453, 155 USPQ 521 (1967); In re Naylor, 369 F.2d 765, 152 USPQ 106 (1966); and Application of Mercier, 515 F.2d 1161, 185 USPQ 774 (1975)
12. Beereboom 6/9/78 Dep., pp. 45-46
13. Oglesby, p. 12; IR's note #35
14. Pf. PTR pp. 13-15
15. Corning Glass Works v. Brenner, 470 F.2d 410, 418, 175 USPQ 516, 522 (D.C. Circuit 1972)
16. IR's Opening Post Trial Brief p. 130
17. IR's PTB p. 18
18. PX 34
19. McCormick 1974 Dep. pp. 70-71
20. PX 2, pp. 79-88
21. von Schach 8/7/78 Dep. p. 12
22. PX 2, pp. 63-64
23. Blackwood Tr. pp. 6157-9
24. PX 2
25. IR Opening Post Trial Brief p. 27

26. von Schach nb. 5978 (1/18/61); PX IR 435 of von Schach Dep. E. 17; von Schach Tr. pp. 5384, 5386, 5389-5393
27. IR 1060; Adams Dep. Ex. 24; von Schach nb. 5978, p. 101 (2/6/61); von Schach nb. 4854, p. 137 (12/17/63); Beereboom nb. 4190, p. 270 (9/15/61); Gilman nb. 4825, p. 24 (8/26/63)
28. IR 485
29. Beereboom 1978 Dep. pp. 193-194
30. IR 490
31. Beereboom Dep. pp. 195-6
32. von Schach Tr. p. 5405
33. IR 1258; PX 1
34. Adams 5/10/78 Dep. pp. 238-9.
35. Adams 5/10/78 Dep. p. 240
36. Adams 5/11/78 Dep. p. 401, l. 14; p. 403, l. 4
37. Adams 5/8/78 Dep. p. 123, l. 18; p. 124, l. 18
38. IR 474 and 475
39. Beereboom 1978 Dep. pp. 110, 156-7, 160, 188, 191; Blackwood Tr. pp. 993-995, 1018-1021, 1078-1082.
40. IR 504, 516, 544, 527-530
41. von Schach Tr. p. 524
42. Beereboom Dep. pp. 114-115, 121
43. Id. 122-126
44. Beereboom June 1978 Dep. pp. 132-3; see also Blackwood Tr. pp. 958-9
45. Tr. 1069-1075; see also IR 411 (last line of paragraph on Discussion)
46. Adams Dep. pp. 305-312
47. Adams 5/11/78 Dep. pp. 393-401
48. PX 70-7
49. IR Post Trial Brief p. 61
50. Id., p. 61

51. See Pfizer, Inc. v. IR Corp., 538 F.2d 180-193, note 27, 190 USPQ 273-284, note 27
52. PX 68-1
53. PX 68-1
54. PX 75
55. PX 76
56. IR 1761
57. PX 78
58. PX 70-4, p. 1
59. PX 70-5
60. PX 70-4
61. Oglesby Tr. pp. 1488-9, 1491
62. PX 70-7 thru 70-13
63. PX 70-8; Oglesby Tr. p. 1503
64. PX 70-9; Oglesby Tr. p. 1509
65. PX 70-10
66. PX 70-11
67. PX 70-13
68. PX 70-14
69. Oglesby Tr. p. 1521
70. IR's statement, supra
71. IR's statement, supra
72. PX 2, pp. 12, 13
73. IR 85, 90, 129, 130, 131; PX 34
74. PX 70-15
75. PX 70-16
76. IR Opening Post Trial Brief p. 64
77. Pfizer's Post Trial Brief, pp. 45-57, 67-73
78. IR Post Trial Brief, p. 86, ll. 18-21
79. IR 1131
80. IR 130
81. PX 68-1
82. IR 1132
83. IR 1134

84. IR Post Trial Brief p. 48, ll. 16-26
85. IR Post Trial Brief p. 87, ll. 19-22
86. Adams 5/9/78 Dep. p. 182, ll. 13-21
87. IR 130
88. IR Post Trial Brief p. 52, ll. 3-5
89. Murai Tr. 3399, ll. 17-21
90. PX 70-16
91. Stephens Tr. pp. 3659-60
92. Oglesby Tr. pp. 2493, 2496
93. PX 70-17
94. PX 2, p. 70
95. PX 70-18
96. PX 70-19
97. PX 70-21, p. 5
98. PX 70-20
99. PX 70-21
100. Oglesby Tr. 1571-1573
101. Mitscher Tr. p. 4907; PX 91
102. Tr. pp. 4147-4153
103. PX 70-23
104. IR Post Trial Brief pp. 74-76
105. Murai 3028-30
106. Murai 3052-54
107. Murai 3148-49
108. Murai Tr. pp. 3035-39; Wagner Tr. pp. 2670-72
109. Murai 3041-46
110. IR 1116-1
111. Murai Tr. pp. 3111-3113, 3106-7.
112. Stephens Tr. pp. 3667-8, 4124-5
113. PX 32
114. Wagner Tr. pp. 2653-4, 2669, 2688-9
115. Woodward Tr. 1221-2
116. TR Post Trial Brief p. 81
117. Oglesby Tr. pp. 1582-3

118. Oglesby Tr. pp. 158-3
119. PX 70-27; Oglesby Tr. pp. 1585-6, 1933-4, 1948-9
120. Oglesby Tr. 1585-7
121. Fire Wrapper, p. 89
122. IR Post Trial Brief p. 83
123. Id. 86-7
124. Jensen 1974 Dep. pp. 7-8, 10-12, 82-83
125. McCormick 1974 Dep. pp. 16-17, 23-24
126. PX 70-21
127. PX Exhibit 2 (file wrapper), p. 106
128. Id.; Oglesby Tr., pp. 1595, 1605
129. Adams 5/8/78 Dep. pp. 100-101; Px Ex. 2, p. 106
130. Adams 5/10/78 Dep. pp. 226-229; 5/11/78 Dep. p. 387
131. PX 2, 106-107
132. Id. 107
133. Adams 5/8/78 Dep. pp. 99-101; 106-8; 5/10/78 Dep. p. 226; 5/11/78 Dep. p. 415
134. IR Post Trial Brief p. 91
135. Oglesby Tr. p. 1629
136. PX 71-9
137. PX 2, pp. 69-74
138. PX 71-1
139. PX 71-1
140. PX 2, pp. 12, 13
141. IR 85, 90, 129, 130, 131; PX 34
142. Woodward Tr. pp. 1168, 1170; Adams 5/9/78 Dep. pp. 157-159
143. Id.; Oglesby Tr. pp. 1671-2
144. McCormick 1974 Dep. pp. 54-56
145. Woodward Tr. p. 1304; Mitscher Tr. pp. 4930-36
146. Woodward Tr. p. 1204

147. Mitscher Tr. pp. 4841, 4930, 4959-61; PX D-3, PX 34
148. Woodward Tr. p. 1208
149. PX 12
150. Woodward Tr. pp. 1174-77; Blackwood Tr. pp. 440-443; PX 15, 16, 17
151. Blackwood Tr. pp. 440, 449, 451-454; PX D-2
152. PX 34
153. Oglesby Tr. pp. 1615-6; Woodward Tr. p. 1203; PX 12
154. Woodward Tr. pp. 452, 453, 1185, 1186
155. Oglesby Tr. p. 1616
156. Id.
157. P. 1270
158. Dann Tr. pp. 4324-26
159. PTB 93-94
160. Id.
161. PX 2, pp. 69-74
162. Oglesby Tr. pp. 1624-29, 1673; Adams 5/8/78 Dep. pp. 33-39; PX 34
163. PX 2, p. 68
164. Oglesby Tr. pp. 1676-1678; PX 71-9
165. PX 2, pp. 71-74
166. Oglesby Tr. pp. 1707-9; PX 71-16
167. PX 2, pp. 92-96
168. Adams 5/8/78 Dep. pp. 47-9; 5/10/78 Dep. p. 317
1269. Adams 5/8/78 Dep. pp. 57-58
170. IR Post Trial Brief pp. 97-98
171. PX 2, p. 1
172. Woodward Tr. pp. 1200-1201
173. PX 70-15
174. PX 11
175. Mitscher Tr. pp. 5061-5062; IR 1394
176. Mitscher Tr. pp. 4803; 4837-8; 5012, 5061-62

177. PX IR 431
178. PX 2, p. 59
179. PX 2, p. 66
180. Id.
181. PX 72-1
182. Adams 5/8/78 Dep. pp. 96-97; 5/9/78 Dep. p. 112
183. PX 2, pp. 70-71; 100-101
184. Adams 5/9/78 Dep. pp. 63, 134, 162-166
185. Adams 5/8/78 Dep. p. 89; 5/9/78 Dep. p. 134
186. File Wrapper PX 2, pp. 93-95
187. PX 2, pp. 100-101
188. Adams 5/8/78 Dep. p. 80
189. PX 2
190. Mitscher Tr. pp. 4843-4847
191. PX 2, pp. 103-4
192. PX 2. pp. 98-102
193. Adams 5/8/78 Dep. p. 73
194. Adams 5/8/78 Dep.
195. IR's Closing PTB, p. 113
196. Id.
197. PX 2, p. 66; 4/26/62 amendment
198. PX 2, p. 70; 4/30/63 amendment
199. PX 2, p. 104; 3/5/65 amendment
200. PX 2, p. 68
201. Id.
202. von Schach 8/7/78 Dep. pp. 4-5
203. English 6/15/78 Dep. p. 41
204. McBride Dep; Ex. 2
205. English 1978 Dep. p. 41
206. Woodward Tr. p. 1222
207. Adams 5/8/78 Dep. p. 115
208. PX 91, pp. 7-8
209. Mitscher Tr. p. 4906
210. IR Post Trial Brief pp. 94, 102, 118

211. PX 2
212. English Dep. pp. 13-14; Eng. Dep. Ex. 4; Von Schach Tr. pp. 5664-5; 5922-25; English 1978 Dep. pp. 24, 29, 32
213. PX 2, pp. 63-64
214. McBride Dep. pp. 34, 46-47; Ex. 1, 2, 3, 4, and 7; English Dep. pp. 45-47; Ex. 8; Blackwood Tr. pp. 6157-9
215. von Schach 8/7/78 Dep. p. 12
216. English Dep.; Ex. 8
217. Blackwood Tr. pp. 6157-59
218. Adams 5/8/78 Dep. p. 116
219. Adams 5/8/78 Dep. pp. 113-114
220. Blackwood Tr. pp. 336-47; Stephens Tr. pp. 3668-73; 3678-79; Rennhard 1974 Dep. pp. 232-3
221. Blackwood Tr. pp. 343-44; PX B1, B2, B3
222. Blackwood Tr. pps. 355-6, 364; PX C-3; Stephens Tr. pp. 3671-2
223. IR 364
224. Blackwood 1974 Dep. pp. 10-12; Blackwood Tr. pp. 607-8; von Schach Tr. p. 5648
225. Stephens Tr. pp. 3674-5
226. Beereboom 1978 Dep. pp. 51-55; 62-63; IR 409, 411, 424
227. Blackwood Tr. pp. 381-83; PX F1, F2, F3; IR 429, 431
228. von Schach Tr. pp. 5488-89
229. von Schach Tr. p. 5676; Blackwood 1974 Dep. p. 14
230. Knuth 1974 Dep. pp. 134, 135
231. IR 1135; Oglesby Tr. pps. 2453-57; PX-1
232. PX 70-15; 71-1; 72-1; IR 1135 p. 17
233. Oglesby Tr. p. 1526; Stephens Tr. pp. 3659-60; PX 80; IR 1017-22
234. Stephens, Id. PX 79, 80

235. Oglesby Tr. pp. 1527-30; Stephens Tr. pp. 3653-55; PX 70-16
236. PX 70-14; PX 2, p. 58
237. PX 70-16
238. PX 70-15
239. PX 70-16
240. IR Post Trial Brief p. 123
241. IR Post Trial Brief p. 63
242. IR Post Trial Brief p. 123
243. IR 18
244. PX-1
245. PX 2, pp. 59, 94 (The file wrapper pages are unnumbered, but if numbered, the references would be found on the indicated pages.)
246. Adams 5/8/78 Dep. p. 18; Adams Dep. Ex. 11, first aff'd. p. 1; PX 87, p. 37